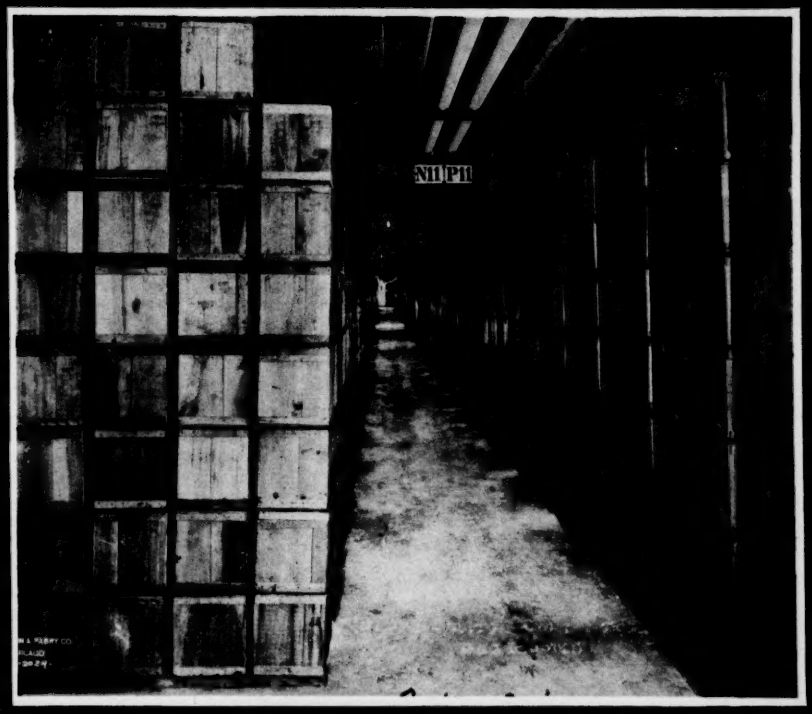
ICE and REFRIGERATION

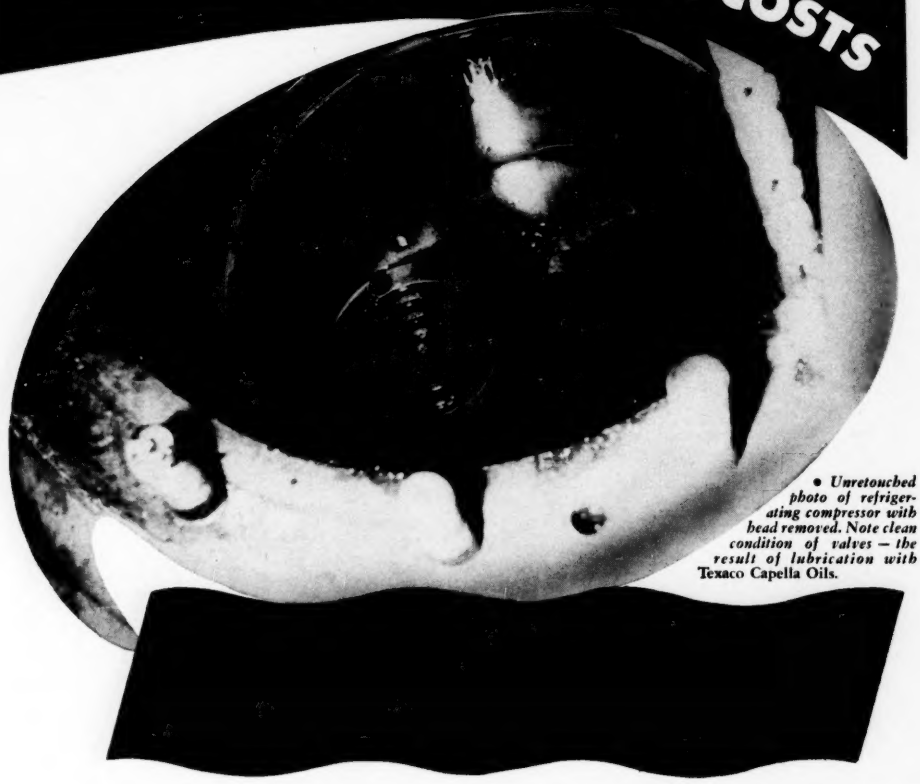


Refrigerated Warehousing Makes Survey of Facilities .... Page 11

JANUARY • 1951

Review of Ice and Refrigerated Warehousing ... Pages 41 and 53

CLEANER VALVES–LOWER COSTS



• *Unretouched photo of refrigerating compressor with head removed. Note clean condition of valves — the result of lubrication with* Texaco Capella Oils.

When you pull the head of a compressor that has been lubricated with *Texaco Capella Oils* and note the clean condition of the valves, the absence of carbon, gum and sludge formations, you'll know why *Texaco Capella Oils* keep refrigeration output high and maintenance costs low.

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WROUGHT IRON

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Ice and Refrigeration

VOLUME 120 NUMBER 1

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January 1951

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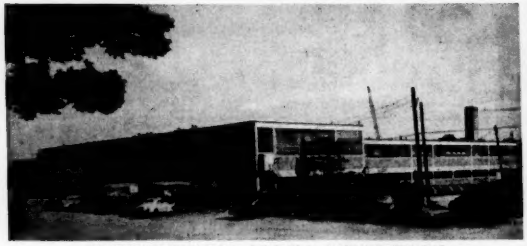

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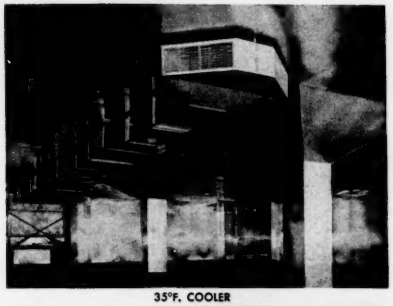

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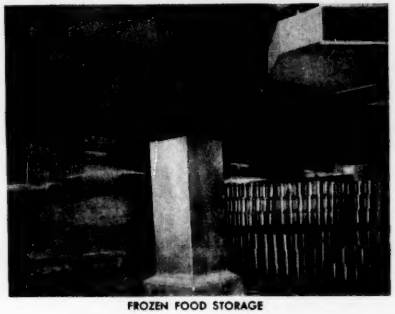

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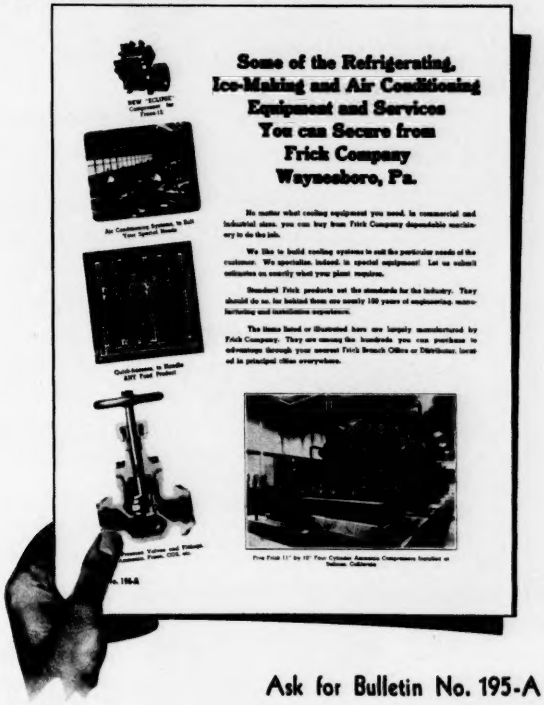
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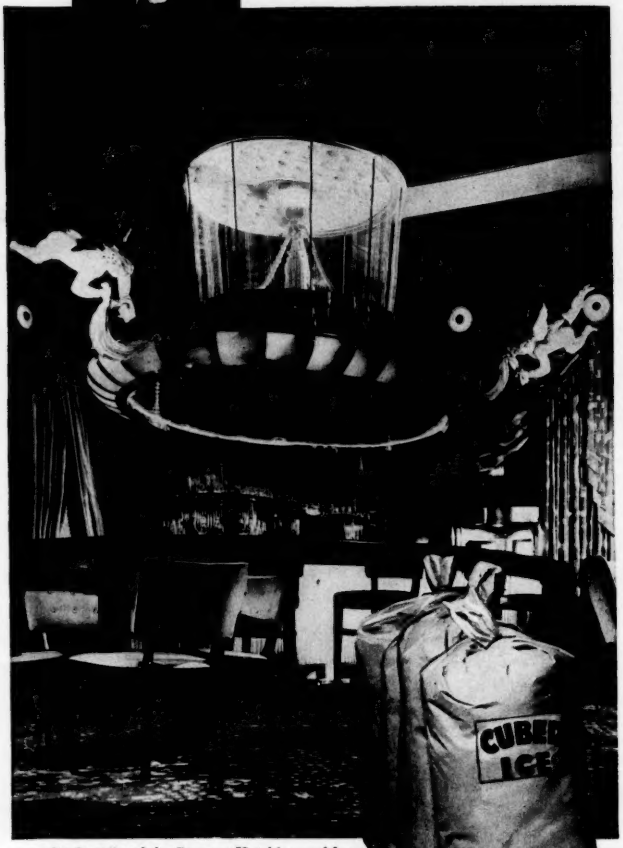
says Nino Bignami, Director Food & Beverage, Congress Hotel, Chicago Illinois



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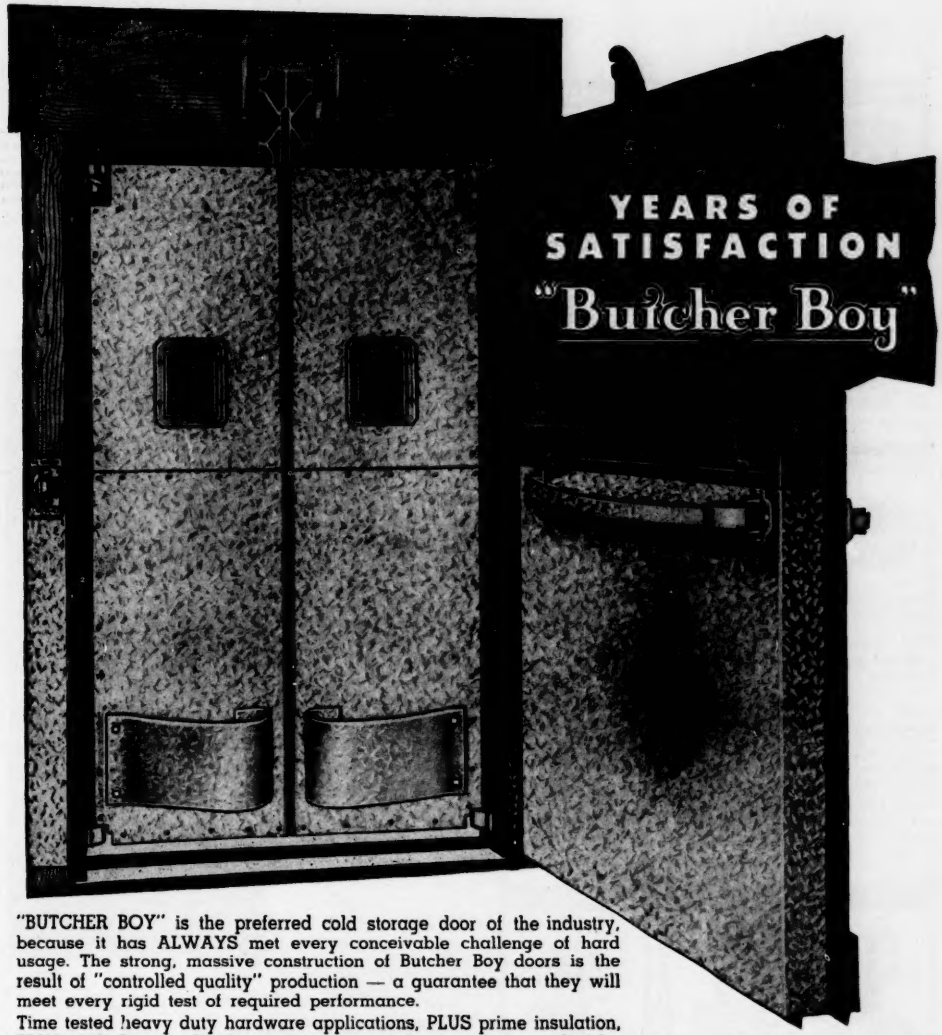

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"3 valves in 1"

TYPE TCL

TYPE TR
Multi-Outlet

TYPE 402
with pressure limiting feature

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with pressure limiting feature

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TYPE M3

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high pressure float valve
Up to 5 tons "Freon-12", 10 tons Methyl Chloride and 20 tons Ammonia.

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electric float switch
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TYPE M91F

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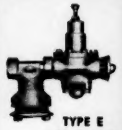

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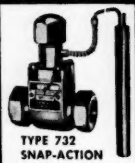
For all refrigerants, with connection sizes up to 6".



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In The Spotlight

REFRIGERATED SPACE, amount of investment, replacement costs and other important statistics are given in the first statistical survey conducted by the National Association of Refrigerated Warehouses. The full report is published in the article starting on page 11.

PAST PROGRESS of the Refrigeration Research Foundation has placed the refrigerated warehousing industry in excellent position to render war service now. A review of the program of the Foundation's annual meeting to be held February 2 and 4 and of its most recent accomplishments are given in the article on page 14.

THE 10-POINT program of public relations for the refrigerated warehousing industry was inaugurated at the annual convention held in Cleveland in 1947. These ten points provided the framework on which the present program is based. The original author and sponsor Harlan J. Nissen discusses this program on page 15.

WAR ECONOMY is expected to be the major motivating force of the National Association of Refrigerated Warehouses during 1951 and plans have been made to meet that need. But it will not completely overshadow the regular association work which will continue. This program is outlined by Wm. Dalton, executive vice president of the association on page 21.

DETAILS of the 1951 annual convention program of A.W.A. and N.A.R.W. were not completed at press time for this issue, but four of the leading speakers had been arranged for. These are listed on page 21.

COVER PICTURE: Increased volume of shell eggs in storage is expected in 1951. This view shows egg cases stacked in piles in egg storage room of middle western refrigerated warehouse.

THE QUINCY MARKET Cold Storage & Warehouse Co., Boston, has added a new section addition making available a 75 percent increase of total refrigerated space. Of particular interest are fluted wall panels and floor slabs designed to eliminate flared column caps, beams or drop panels. For description and pictures see page 23.

A NEW REFRIGERATED and combination freight car, the floor, side and end walls, and ceiling made of laminated plywood has been built by the Pressed Steel Car Co., Chicago, Ill., providing greater capacity and less weight. For description and illustrations see page 27.

THE N.A.P.R.E. 41st annual convention was held at Los Angeles, Calif., November 28 to December 1. A program of particular interest was presented, covering practical engineering subjects and other features that appeal to engineers. Report of the convention, summarizing reports of officers and other proceedings starts on page 30.

THE REFRIGERATED WAREHOUSE review, published annually by ICE and REFRIGERATION, reveals a fairly successful year and a favorable outlook for 1951. Occupancy during 1950 was somewhat better than the year before and these gains, and maybe more, are expected to continue into 1951. The full report starts on page 41.

SHELL EGG STORAGE will show an appreciable increase in volume for 1951 as compared to 1950, but is not likely to regain the storage volume of 1930, according to a Department of Agriculture analyst. Trend toward a normal level will be influenced by continuing tendency toward seasonal leveling out of egg production, and growing importance of frozen eggs. For detailed article see page 45.

THE ANNUAL report on monthly cold storage holdings shows that the volume of perishable food commodities stored during 1950 held up very well, with average increases over last year, the year before, and the five-year average. The report is published on page 49.

THE ICE INDUSTRY review, an annual feature of ICE AND REFRIGERATION shows the probable outlook for 1951 and a review of the main factors affecting the business during 1950. These views were contributed by leading ice manufacturers and distributors and analysed in the article on page 53.

ANNUAL CONVENTIONS of the Illinois and Delta States Associations of Ice Industries were held during the past month. The use of research in creating new markets for ice, regain lost markets, diversification as a means of increasing the net profit, practical merchandising, and advertising were among the subjects discussed. Reports of these two conventions are on pages 61 and 62.

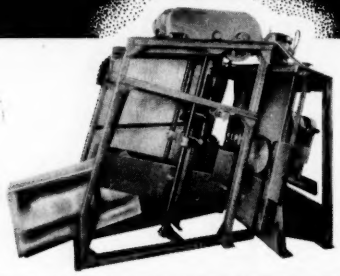
Can You Explain It?

A FIREMAN in Milwaukee, called to investigate a leak in a household refrigerator, discovered a burst can of ham on the floor underneath. The tearful, beautiful, furious lady of the house pointed to the label on the can, which said, "Keep Under Refrigeration."

CUBE...SCORE...SIZE...

at bigger profits with G-W equipment

G-W has made ice-plant equipment for 136 years. We've learned to incorporate features that mean better production and bigger profits for you. For instance:



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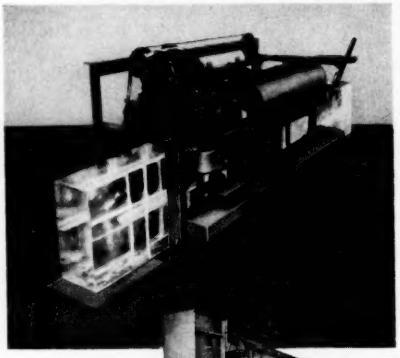
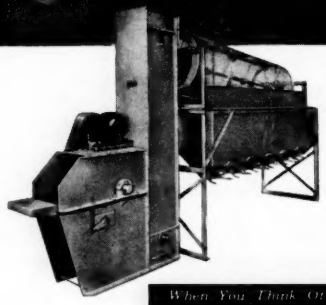
Bigger profits because less ice is wasted, more sold. Take the Type CA Cuber. Fully automatic, it accommodates a 300 to 400-lb. cake of ice and shoots out cubes at a rate of 26,000 an hour. Cake is constantly held firm and square in alignment with cutting saws for perfect cubing. When cake is 75% cut, the next one slides easily into place. It is sturdy, corrosion proof, and perfectly safe for operators. Designed for minimum maintenance and operation costs. Details are in Bulletin 488.



. . . A G-W SCORER TO MEET EVERY REQUIREMENT

Bigger profits because you keep initial cost at a minimum by choosing one of many units—the one that fits your capacity. Type F Scorer is a semi-automatic scorer for small and medium tonnage plants. One man can score three 300-400 lb. cakes a minute. It is semi-portable and requires no pit or foundation. Type G is fully automatic with a capacity of five 300-400 lb. cakes a minute. Type UM accurately scores five 300-400 lb. cakes per minute and features built-in feed and discharge conveyors. All are precision-built, designed for maximum efficiency and operating economy. Send for Bulletin No. 489.



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REFRIGERATED WAREHOUSING INDUSTRY TAKES INVENTORY OF ITS FACILITIES

Statistical survey conducted by National Association of Refrigerated Warehouses, shows total space, amount of investment, replacement costs, and other important figures.

WILLIAM DALTON
Executive Vice-president
National Association Refrigerated Warehouses

INTRODUCTION of the first industry-wide statistical survey on record stands out as a banner achievement of NARW during the year 1950. Capping the climax of years of planning within the industry, the facts and figures gathered by the association staff in Washington, will fill a great need for accurate and up-to-date information about one of America's vital industries. Following this initial publication the survey will be revised and expanded from year to year so as to give a continuing picture of the growth and improvement of the nation's cold storage facilities.

Basic Needs Covered

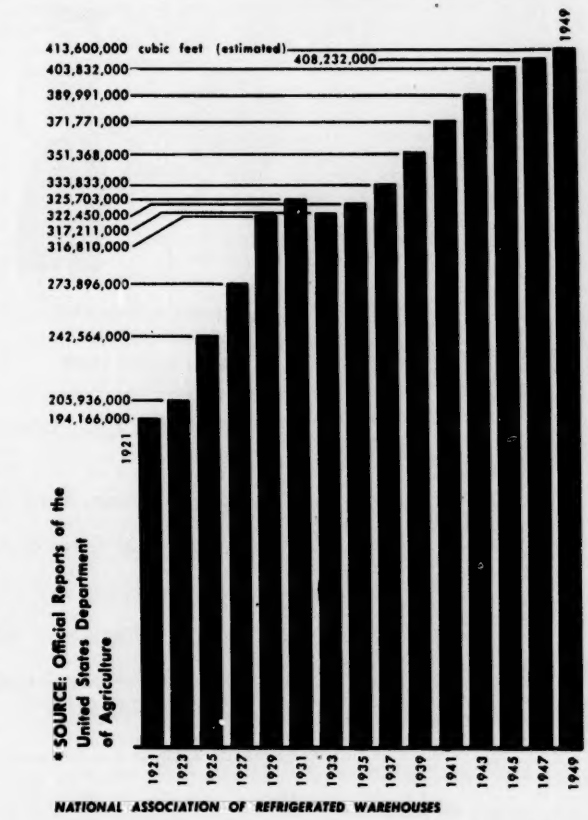
In order to cover basic needs for information, both for industry use and for governmental guidance in emergency planning, the survey included the following subjects: total space; amount of investment; replacement costs; number and type of employees; wages; taxes paid by the industry; power use; mechanization; cost of maintenance, repair and operating supplies.

Comparison figures were used where possible.

Total Space in Industry

With a current total of 413,600,000 cu. ft. of public refrigerated warehousing space in over 750 plants now in operation, the cold storage industry has ample facilities to handle storers' requirements. Growing at an estimated rate of 5,000,000 cu. ft. per year, the industry is planning expansion at a pace calculated to provide a more than adequate buffer against future public and government needs for storage space. By far the greater amount of this increase is in the freezer temperatures, particularly 0F. and below. There is now about 1½ cu. ft. of freezer space in operation for every cu. ft. of cooler space. (Adding private and semi-private houses, meat packing plants and apple houses would swell the total of gross refrigerated space in the United States to more than 700 million cu. ft.) This does not include refrigerated facilities operated by wholesalers, jobbers, or retailers who do not store for 30 days or longer, nor space in lockers of small capacity.

More than a quarter of a million dollars, $268,840,000 has been invested by cold storage operators in order to set up existing warehouse facilities. This represents $13,275 per job as compared with $8,000 per job for manufacturing industries.



How the industry has grown. Gross storage space in public refrigerated warehouses in the United States, 1921-1949

A Train of Refrigerator Cars 1103 Miles Long Would Be Required to Move Capacity of Public Refrigerated Warehouses

Replacement Costs

At today's rates, the original investment has swelled in volume to a figure of $628,672,000; a net increase in value of $359,832,000, or $31,045 for every job provided by the industry.

Taxes

During the year 1949 the industry paid out over $25 million in federal, state, local, payroll, withholding and other taxes. Federal income taxes were by far the largest single tax item.

The Industry Paid $25,000,000.00 in Federal, State and Local Taxes

Manpower

Present emergency planning required a thorough breakdown of this important phase of the survey. Comparative figures for the years 1948 and 1949 are given:

Wages

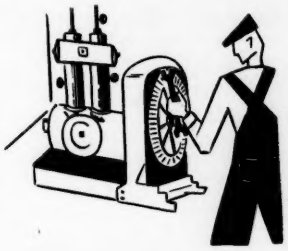
In the year 1949, $65,387,250 were paid out in wages to employees of the nation's cold storages.

Here is an up-to-date, complete and authoritative statistical picture of the public refrigerated warehousing industry in the United States. It does not include semi-public or private refrigerated warehouses. It shows a total of over 413 million cubic feet of refrigerated space in more than 750 public plants in operation, and this space is increasing at the rate of five million cubic feet per year. To replace these facilities at current costs would require an investment of approximately three-quarters of a million dollars. In 1949 more than 65 million dollars were paid out in wages.

Employees Received $65,387,250.00 in Wages During 1949.

Cost-Maintenance, Repair and Operating Supplies

To keep their plants running and repaired, cold storage operators in 1948 spent $10,302,434. In 1949 that figure dropped to $9,893,742, which is attributed to the general price decline in effect throughout 1949.



Maintenance, Repair, and Operating Costs Were $10,000,000.00 Annually.

Again for emergency planning purposes, the industry was asked how much of the above figures was spent to buy refrigerants. This is shown in the following table:

AMOUNT SPENT FOR REFRIGERANTS

REFRIGERANT	1948	1949
Ammonia	$362,970	$349,282
Freon	3,456	4,800
Other	4,108	3,662
Totals	$370,534	$357,744

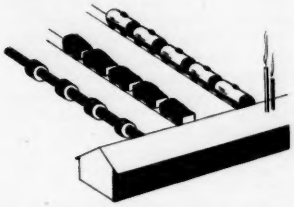
Job Classification	Number of Persons Employed 1948	1949
Executive Officials, Staff Assistants	1,462	1,506
Supervisory and Clerical	3,204	3,192
Refrigeration Engineers (Licensed)	1,010	1,012
Refrigeration Engineers (Unlicensed)	1,184	1,224
Maintenance Personnel and Skilled Mechanics	1,308	1,336
General Labor	11,106	10,618
Other	1,086	1,364
Total	20,360	20,250

Source of Power

Ninety-three percent of the industry, the survey revealed, uses electricity purchased from private or public sources. The 7 percent who generate their own power indicated types and quantities of fuel used as follows:

	1948	1949
Coal (short tons)	125,468	101,922
Fuel Oil (gallons)	3,461,124	3,637,476
Gas (1,000's of cu. ft.)	923,070	1,112,938

It required 300,350 gallons of oil in 1948, 299,252 gallons in 1949 to lubricate the machinery used in all cold storage operations.



Annual Power Requirements:
Fuel and Oil Lubricants
636 Tank Cars
Coal . . 2,038 Carloads
Gas . . . $1,112,938.00

REFRIGERATED WAREHOUSE PERSONNEL

JOB CLASSIFICATION	NO. OF PERSONS EMPLOYED 1948	1949
Executives, Officials and Staff Assistants	1,462	1,506
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Total	20,360	20,250

Mechanization

Forty-six percent of the industry's plants are mechanized to some extent, survey figures show. Twenty-two percent are at least 75 percent mechanized, 10 percent are 100 percent mechanized. The following table indicates the degree and type of mechanization. It is anticipated that this phase of cold storage operations will record a constantly expanding volume of increase in tabulations of future surveys:

DEGREE AND TYPE OF MECHANIZATION

Type of Equipment	Number of Pieces	Approx. Value
Power Transporters	646	$ 858,258
Ford Trucks	598	2,115,612
Conveyors (power)	320	460,356
Portable elevators	376	258,452
Pallets	1,136,570	2,734,436

In addition to this, the industry uses about 34,000 hand trucks valued at $1,380,000.

Geared to the needs of storers for its services, the refrigerated warehousing industry is growing in size, improving in quality constantly. The annual statistical survey, a fair and logical means of recording the industry's case history has the enthusiastic support of warehousemen everywhere. Its usefulness has established it as a fixed asset of the industry.

Here's What Association Members Get For Their Dues Money

1. A Listing of Their Products and Services in the Directory of Public Refrigerated Warehouses — used by hundreds of warehousemen and thousands of handlers and processors of perishable foods—a business getter for N.A.R.W. members.

2. Opportunity to Tell one of their best customer industries what they are doing to serve it better through special periodic bulletins.

3. Receipt of Regular Membership Bulletins — "Cold Facts" — clear, concise reporting of industry affairs — keeps them informed on latest happenings in the Refrigerated Warehousing Industry.

4. A Tailor-Made Information Service — answers to questions about industry affairs — all inquiries handled individually by trained and experienced staff.

5 Representation in Washington — extensive N.A.R.W. contacts — daily check of legislative, political, economic developments — call on the association for information from government bureaus, agencies, etc.

6. A Group Insurance Program Life Insurance up to $5,000, for executives and employees at low group rates. Double indemnity feature. Generous benefits for loss of sight, dismemberment. Builds employee loyalty, community prestige, helps private enterprise fulfill its social obligations, counteracts additional government "security."

7. Statistical Program—facts and figures about one of their best customer industries, how much? where? how many? taxes, wages, space, helpful information.

8. Receipt of A.W.A. Yearbook—complete proceedings of industry conventions — the industry's Bible —valuable reference source.

9. Privilege of Displaying Material at N.A.R.W. conventions — hundreds of warehousemen see first hand, products and services. No extra charge for this.

10. Receipt of Special Committee Reports — industry leaders constantly at work studying and reporting on industry problems.

11. Public Relations Program designed with members in mind—how to win friends and influence people among employees, customers, community, publicity, developing more favorable impression toward cold storage.

12. Access to Advice and Experience of 450 N.A.R.W. members—executives whose combined experience totals over 10,000 years—free interchange of ideas—suggestions.

13. Privilege of Free Consultation with headquarters' staff members. Assistance with problems relating to cold storage operations.

14. Access to Services and Facilities of N.A.R.W. office at all times. Washington service station. Headquarters in Washington.

Refrigeration Research Foundation Prepares to Render War Service

A CONSTANTLY progressing technology in refrigeration and a growing cold-storage industry are essential to national preparedness for war. Our industry is in excellent position to render war service now, because of past progress. Continued progress is necessary to assure strength in the future."

These are theme words of Director H. C. (Dutch) Diehl of the Refrigeration Research Foundation, whose annual meeting will be held February 2-4, 1951, in Hotel Statler, Boston, in connection with the annual meetings of the National Association of Refrigerated Warehouses and the American Warehousemen's Association.

Director Diehl will address the meeting of members February 3, following the meeting February 2 of the Scientific Advisory Council. For February 4, Mr. Diehl and William Dalton, Executive Vice President of N.A.R.W. have arranged a special program. Frank Kearney, vice-president, J. Leo Cooke Warehouse Corporation, Jersey City, will talk on "Selling Space—With or Without Emergencies". Dr. J. G. Woodroof of Georgia Experiment Station will discuss researches on refrigerated storage of candies, W. T. Pentzer of USDA will report recent researches on storage of fresh citrus during spring and summer months, Dr. E. A. Fieger of Louisiana State University will summarize recent work on freezing and storage of Gulf shrimp. These are three of the research projects that the Foundation has aided in recent years. They have made noteworthy progress in 1950. A matter of special interest is Dr. Fieger's recent work on the so-called "black spot" problem with shrimp.

Leading Achievements

Here is a preview of Director Diehl's report in digest form:

The project on candies (mentioned above) has established storage optima for 18 varieties. For many varieties O F. has proved advantageous for storage periods of 10 months or longer. The National Confectioners Association has cooperated on this project.

The project on citrus storage conducted by USDA under the guidance of W. T. Pentzer, Paul Harding, A. L. Ryall, and James Wiant has gone a long way toward establishing sound technology for successful storage of Florida oranges and grapefruit during late-spring and early-summer months. Records were kept on 11 cars of fruit, handled and sold under commercial conditions, in 1950.

At the Western Regional Research Laboratory of USDA in Albany, Calif., the project on frozen-food tolerance of varying temperatures and other conditions is getting under way. Storage testing has begun, and plans call for extensive development of facilities, which will permit comprehensiveness and thoroughness. The project is expected to answer many questions of long standing. It has major financial support from funds made available through the Research and Marketing Act of 1946.

Major Projects

Twenty major projects have been active during the year. At Northwestern University Prof. B. H. Jennings and co-workers have continued work on low-temperature hygrometers. Projects on frozen meats at Kansas State College and on frozen eggs at Ohio State University are now well advanced. A project at University of Minnesota under Dr. S. T. Coulter is concerned with coagulation of frozen milk, particularly the basic causes. The project at Purdue University under Dr. C. E. Baker is looking into the fundamental nature of volatiles given off by fresh fruits during cold storage, as a possible basis for practical removal. At Iowa State College, under Dr. J. C. Eldredge, a project on refrigeration of popcorn, as related to popping volume, is getting well started. All other projects have made satisfactory progress.

Short-term studies are becoming more important in the Foundation's program. Last year's promising studies on green and roasted coffees were actually a short-term investigation, with considerable leadership from industry. These studies are being continued as much as possible, with technical assistance from Dr. C. E. Baker of Purdue University. At Massachusetts Institute of Technology Prof. B. E. Proctor and E. E. Lockhart have planned some studies on refrigerated storage of spices, in collaboration with the research committee of the Spice Trades Association and the Foundation. Short-term studies are being made at Columbia University on cold-storage thermometry, moisture condensation on goods removed from low temperatures, and on humidification and dehumidification of storage atmospheres.

New studies are in the planning stage. Storage of lemons in market centers is a project subject now definitely accepted; lemons will be worked in with the other citrus fruits. Storage of bottled beer (particularly control of chill haze) is under consideration, and also storage of frozen lobster, Bermuda-type onions, frozen turkeys. Foundation leaders are actively considering project work on frost heaving, as related to cold storage construction.

One major project was initiated during the year, on freezing and storage of crab meat, under the leadership of James M. Lemon, U. S. Fish and Wildlife Service.

Other Progress

Cooperation has continued with technical groups comparable to the Foundation in other industries among them dairy, poultry and eggs, citrus, deciduous fruits, meats, fisheries, confectionery, coffee and others.

Emphasis on review and interpretation of technical literature in the field of commodity refrigeration has continued. Plans have been made for collection of accumulated information in a manner suitable for more efficient handling.

The Foundation has been preparing itself for greater participation in war-preparation activity, by removal of the Director's office to a more central location in Colorado Springs, Colo., and by modifications in its research and action programs.

Membership has increased; 15 companies have joined the Foundation during the year. Officers during the year have been:

Arthur N. Otis, Merchants Refrigerating Co., New York, President.

R. C. Muckerman, City Products Corp., St. Louis, Vice President.

Wm. A. Sizer, Produce Terminal Cold Storage, Chicago, Treasurer.

W. C. Baker, Produce Terminal Chicago, Assistant Treasurer.

H. C. Diehl, Secretary and Director.

E. G. Erickson, Central Cold Storage Co., Chicago, Assistant Secretary.

Samuel C. Prescott, Dean Emeritus Massachusetts Institute of Technology, Chairman Board of Governors.

PROGRESS OF 10-POINT PROGRAM

A review of the basic public relations program adopted by the National Association of Refrigerated Warehouses and a summary of the accomplishments to date.

FROM a few scribbled notes hastily scrawled on the back of an envelope, the "10 Point Program"—a master plan for public relations activity—has mushroomed into prominence on the agenda of the cold storage industry's trade group, the National Association of Refrigerated Warehouses.

In point of time, it's a far cry from the craft guilds of the middle ages to the public relations program of today. Yet they've shared the same basic purpose for 500 years.

The public relations concept became a working reality with craft-guild invention of the hallmark as a symbol of quality workmanship. Ancient artisans recognized that they had an outstanding obligation, that of pleasing their customers. They met it by establishing quality standards and adhering to them. Moreover, they let the community know they were doing a good job and that they were proud of it.

Public Relations Potent Force in Business

As the years passed, the public relations idea remained in the background, an obscure but potent force in both personal and business affairs.

For centuries it was nothing more than a prop used by professional "do-gooders." In due course, it gravitated westward with the march of civilization to the new world. But in America, private enterprise was too busy having growing pains to be seriously concerned with niceties such as business etiquette. "Let the buyer beware" became the rule of the day. And the buyer accepted the dictum, grudgingly perhaps, but with the certain knowledge that he had no other alternative.

There had to be a reckoning. It came during the administration of the redoubtable President, Teddy Roosevelt. Under his vigorous attack, "the public be damned" attitude soon became a luxury which few businessmen could afford. That was the beginning of real public-relations consciousness.

The rising star of Karl Marx hastened concentration on public relations principles by American business management, for the very good reason that its users found in it a potent means of staving off the low blows of the prophets of planned economy.

HARLAN J. NISSEN
Los Angeles, Calif.

Past President, National Association of Refrigerated Warehouses

During the past decade, public relations as a beacon light of business conduct has at last come into its own. Today it is found influencing business policy all the way from the board room to the assembly line in companies throughout the land.

The 10 Point Program

Refrigerated warehousemen, as a progressive business group, are well aware of the current trend. They subscribed to it officially in 1948 by adopting a "10 Point Program" of public relations for their industry.

These were the "10 Points," as originally outlined by NARW member Harlan Nissen. They became the skeleton on which grew the flesh and sinew of a virile public relations program:

1—Develop press relations and service news outlets.

2—Write favorable articles and avoid bad publicity.

3—Develop and promote trade relations.

4—Originate intelligent, modern legislation.

5—Combat unfair legislation.

6—Elevate standards of the industry.

7—Extend the industry betterment program.

8—Follow up programs already started.

9—Customer education.

10—Promote and develop greater regional activities.

Sketchy, yes. But a solid framework, and one which has proved itself a more than adequate means of inspiring action on the public relations front.

Immediately upon its adoption, the NARW put Association machinery in operation to carry out the program.

The Original 10 Points of N.A.R.W. Public Relations Program

1—Develop press relations and service news outlets
2—Write favorable articles and avoid bad publicity
3—Develop and promote trade relations
4—Originate intelligent, modern legislation
5—Combat unfair legislation
6—Elevate standards of the industry
7—Extend the industry betterment program
8—Follow up programs already started
9—Customer education
10—Promote and develop greater regional activities

Press Relations

A system for formal press releases was instituted, and a home-front search for industry facts began. Members were encouraged to keep Association headquarters in touch with their activities. Wherever an item showed promise of news value, it was picked up and issued in release form either to the trade press, the general circulation papers, or radio. The resultant healthy interest in cold storage affairs encouraged the industry greatly. And edi-

tors now look to NARW headquarters as a source of live industry news.

Favorable Publicity

Unfavorable and unsubstantiated publicity has been avoided more than once since inauguration of the vital "10 points." The Association, as the "official clearing house," came to be recognized as the source of correct information about the business of refrigerated warehousing. From its listening post in Washington, the Association staff was in position to rush into the gap with the industry side of the story whenever it was learned that distorted views were in the making. That sort of fire-brigade activity has paid big dividends in many fields—"public acceptance," "federal encroachment," and others.

Trade Relations

Trade relationships have improved to a great extent. Realizing that all industry groups have substantially the same problems and objectives, NARW set about strengthening its lines of communication reaching allied business groups. The Association bulletin, "Cold Facts," together with general releases and special publications are sent regularly to a large number of interested outsiders.

National Legislation

For American businessmen, the Battle of Capitol Hill is never through. The tremendous amount of grist for the legislation mill must be sifted constantly for signs of harmful effect upon cold storages. Refrigerated warehousemen are fortunate in having a watchdog committee in Washington doing yeoman service in protecting the industry's interests. Ready at all times to supply correct information as it may be needed by the various committees of Congress, cold storage men through their legislative committee and its able chairman have worked out an effective liaison with government. It has strengthened the industry's hand and has left a favorable impression in quarters where it counts dollar-wise to put one's best foot forward.

Industry Standards

The standards of the industry have not been overlooked. Public relations is not a whitewashing process. Warehousemen realize that their own house must be put in order before any attempt is made to influence the opinions of others. Through inter-industry conclaves and through co-

Sponsored by Harlan J. Nissen, who was then president of the Association, a new program of public relations was presented at the 56th annual convention of the National Association of Refrigerated Warehouses held in Cleveland, Ohio in 1947. Later this list of "what's to be done" was adopted as a "10-Point Program" of industry betterment. As its author and sponsor, Mr. Nissen is particularly well fitted to discuss this program, its progress, and its accomplishments to date.

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operative action with the Federal Trade Commission, Departments of Commerce, Labor, and Agriculture, industry standards are continuously reviewed, and revised where necessary. That sort of action makes a positive impression on the general public and on regulatory bodies, too. It all adds up to better business reputation.

Public Relations

Public Relations activity in the refrigerated warehousing industry is continuous. There are no one-shot projects on the NARW agenda. The programs started are carefully followed through from logical beginning to fruitful ending. Results are what count. NARW public relations activities are designed to produce positive results.

Customer Education

Customer education is a big item in the overall public relations program. Essentially, it means creating a better business atmosphere through community understanding. In that direction, the better-known public relations techniques—press releases, articles, talks, pamphleteering — are employed by NARW. The public is interested in the industry story. Moreover, as customers, they have learned the right to know what goes on behind the scenes. Cold storage men are proud of their accomplishments and eager to pass the word along to the community as a whole.

Creating and maintaining a feeling of unity within industry is a public relations problem, too. Basically, it means constant personal contact. The exchange of ideas and information on an industry-wide basis. NARW's staff spends a portion of its time promoting this phase of the situation. Regional conferences, seminars on various industry problems, national conventions, all serve to integrate the industry and keep internal friction reduced to a minimum.

Idealistic, but coldly calculating when it comes to judging results, NARW's Executive Committee has taken a long look at its own public relations program. It likes what it has seen.

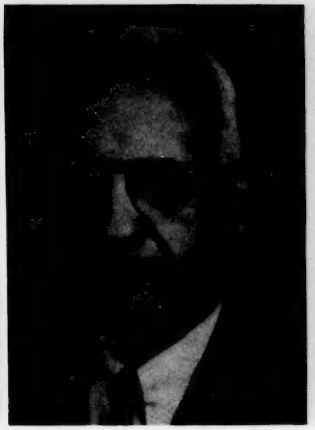
Horse and buggy business methods have no place in the refrigerated warehousing industry. Keeping pace with the times is a major concern to cold storage men. They're convinced that one of the biggest problems in sight right now is the one involved in dealing with the people upon whom they depend for success—the employees, customers, stockholders, suppliers without whose support they are lost. It's a public relations problem, alright. Through their "10 Point Program," warehousemen think they have found a solution.

Food Technology Program at Massachusetts Institute

TO DEFINE and examine recent scientific developments important to the food industries, a special program in food technology will be offered at the Massachusetts Institute of Technology during the summer session of 1951, from June 25 to July 31. The course is offered to enable those with a knowledge of the pertinent basic sciences to augment their technical background with a study of recent developments in food manufacture and control. The course is also designed for advanced engineering and chemistry students. In addition to lectures, demonstrations, conferences and reports, there will be opportunities for group visits to representative companies in the Boston area. Academic credit, which will be optional, will be given for satisfactory completion of the program to those who take a final examination.

Sessions will be held on Mondays through Fridays from 9:00 a.m. to 12:00 Noon, with laboratory work from 1:00 to 4:00 P.M. Research problems requiring specialized equipment may be assigned to competent workers in fields of their particular interest. Enrollment in this special course will be definitely limited, preference being given to applicants having a background of technical or executive experience in food industries, faculty members of other schools, government workers in food control or nutrition and advanced students in chemistry and engineering.

Julius L. Gagini, Omaha, Nebr.
President, N.A.R.W.



Horace W. Wilson, Philadelphia, Pa., President, A.W.A.

Jerry P. Johnson, Washington, D.C., Vice-president, N.A.R.W.

The Officers – Executive Committee – Committee Chairmen – Chapters – Refrigeration Research Foundation

The Officers

President N.A.R.W.—Julius L. Gagini, Omaha Cold Storage Co., Omaha, Nebr.

President A.W.A.—Horace Wilson, Quaker City Cold Storage Co., Philadelphia, Pa.

Vice-president N.A.R.W. — Jerry P. Johnson, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

Treasurer, W. A. Moore, New Orleans Cold Storage Warehouse Co., New Orleans, La.

Executive Vice-president, William Dalton, Washington, D. C.

Executive Committee

G. F. Dodson, Security Warehouse & Cold Storage Co., San Jose, Calif.

A. B. Efroymson, National Terminals Corporation, Cleveland, Ohio

H. C. Emerson, Cumberland Warehouse Corp., Bridgeton, N. J.

H. A. Gross, Booth Cold Storage Co., St. Louis, Mo.

C. B. Hart, The Seattle Ice Company, Seattle, Wash.

J. P. Johnson, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

W. A. Kopke, Chicago Cold Storage Co., Chicago, Ill.

T. E. McCrary, Memphis Cold Storage Warehouse Co., Memphis, Tenn.

Wm. A. Moore, New Orleans Cold Storage & Warehouse Co., New Orleans, La.

E. E. Seymour, United States Warehouse Co., Detroit, Mich.

C. E. Simmon, Big 4 Ice & Cold Storage, Oklahoma City, Okla.

Committee Chairmen

Safety; J. C. Irwin, U. S. Cold Storage Co., Kansas City.

Banking: H. W. Wilson, Quaker City Cold Storage Co., Philadelphia, Pa.

Legislation: J. P. Johnson, Terminal Refrigerating & Warehousing Corp, Washington, D. C.

Insurance: Harlan J. Nissen, Terminal Refrigerating Co., Los Angeles

Pacer: Garth Shoemaker, Hygeia Refrigerating Co., Elmira, N. Y.

Cold Storage Reporting: E. E. Hesse, United States Cold Storage Corp., Chicago, Ill.

Emergency Plans: V. O. Appel, Fulton Market Cold Storage Company, Chicago

Farm Price Supports: E. G. Erickson, Central Cold Storage Co., Chicago

Membership: H. C. Emerson, Cumberland Warehouse Corp., Bridgeton, New Jersey

Trade Practice Rules: J. P. Johnson, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

Traffic: J. L. Gagini, Omaha Cold Storage, Omaha, Neb.

Chapter Directory

NORTH ATLANTIC CHAPTER

Jerry Johnson, chairman, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

Carleton Peacock, secy., Quaker City Cold Storage Co., Philadelphia, Pa.

GREAT LAKES CHAPTER

L. M. Ashenbrenner, chairman, Great Lakes Terminal Warehouse, Toledo, Ohio

William C. Baker, secy., Produce Terminal Cold Storage Co., Chicago, Ill.

SOUTHEASTERN CHAPTER

T. E. McCrary, chairman, Memphis Cold Storage Warehouse Co., Memphis, Tenn.

C. E. Martin, Jr., secy., Polar Cold Storage, Nashville, Tenn.

SOUTHWESTERN CHAPTER

C. P. Metcalf, chairman, Southwestern Ice & Cold Storage Co., Austin, Tex.

S. C. Wentworth, secy., Scobey Fireproof Storage Co.

SOUTH PACIFIC CHAPTER

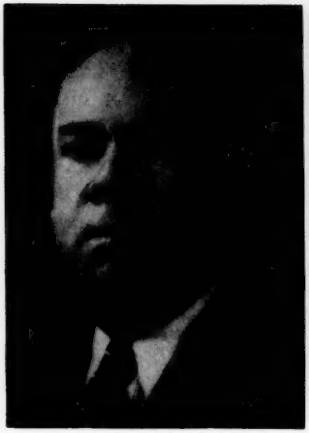
H. J. Nissen, chairman, Terminal Refrigerating Co., Los Angeles, Calif.

Jack L. Dawson, secy., Pacific States Cold Storage Warehousemen's Assn., San Francisco, Calif.

NORTH PACIFIC CHAPTER

A. E. Soli, chairman, American Ice & Cold Storage Co., Everett, Wash.

Wm. L. Baker, secy., The Seattle Ice Co., Seattle, Wash.



W. A. Moore, New Orleans, La.
Treasurer, N.A.R.W.

Wm. Dalton, Washington, D.C.
Executive Vice-pres. N.A.R.W.

G. F. Dodson, San Jose, Calif.,
Executive Committee, N.A.R.W.

MISSOURI VALLEY CHAPTER

J. W. Wilkerson, chairman, Empire Storage & Ice Co., Kansas City, Mo.

A. F. Versen, secy., Security Bldg., St. Louis, Mo.

NEW JERSEY STATE ASSN.

J. K. Storer, president, Union Terminal Cold Storage Co., Jersey City, N. J.

Robert E. Baker, secy., Camden Refrigerating & Terminals Co., Camden, N. J.

Refrigeration Research Foundation

Chairman of the Board, Dr. Samuel C. Prescott, Boston, Mass.

Convention Facts

The 60th annual convention of the American Warehousemen's Association and the National Association of Refrigerated Warehouses and the 7th annual meeting of the Refrigeration Research Foundation will be held at the Statler Hotel, Boston, Mass., starting February 2, 1951.

Refrigeration Research Foundation, opening session Friday morning, February 2.

American Warehousemen's Association opening session Monday afternoon, February 5.

National Association of Refrigerated Warehouses opening session Tuesday morning, February 6.

President, Arthur N. Otis, Merchants Refrigerating Co., New York, N. Y.

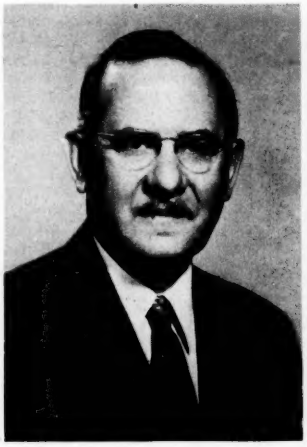
Vice-president, R. C. Muckerman, City Products Corp., St. Louis, Mo.

Treasurer, Wm. A. Sizer, Produce Terminal Cold Storage Co., Chicago, Ill.

Secretary and Director, Dr. H. C. Diehl, Colorado Springs, Colo.

Asst. Secretary, E. G. Erickson, Central Cold Storage Co., Chicago, Ill.

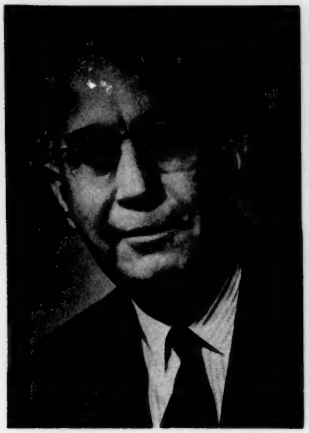
Executive Committee of the Board of Governors: E. M. Dodds, Chicago, Ill.; Arthur N. Otis, New York, N. Y.; Wm. A. Sizer, Chicago; J. F. Meagher, Baltimore; P. D. Burrill, Boston; Richard Muckerman, St. Louis; Harlan J. Nissen, Los Angeles.



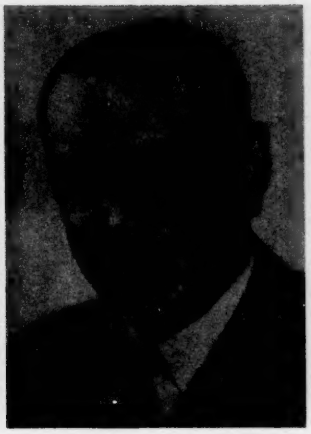
A. B. Efroymson, Cleveland, Ohio
Executive Committee, N.A.R.W.

H. C. Emerson, Bridgeton, N. J.
Executive Committee, N.A.R.W.

H. A. Gross, St. Louis, Mo.
Executive Committee, N.A.R.W.



C. B. Hart, Seattle, Wash.
Executive Committee, N.A.R.W.



W. A. Kopke, Chicago, Ill.
Executive Committee, N.A.R.W.

T. E. McCrary, Memphis, Tenn.
Executive Committee, N.A.R.W.

Welcome to The Boston Convention—

From the Convention Committee

OUT of the deep, rolling plains of the West; down from the timberlands and lakes of the North; in from the teeming cities of the industrial East; and up from the bayou and magnolia country of the South the delegates will gather. Over six hundred men and women, the cream of the industry prepared to celebrate the 60th anniversary of the American Warehousemen's Association.

To those of us who have the pleasure of planning this great meeting, it will be a happy climax. Your presence here will be the reward for which we are working—it's more than ample repayment.

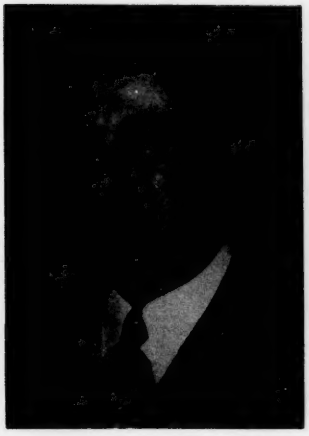
While convention business comes first, we feel that you should know something about your host city. Because it is a sight-seer's paradise, well worth taking the time to explore its historic highspots.

Picturesque Boston grew from a rugged wilderness settled over 300 years ago by the courageous and visionary men and women of a little Pilgrim band. From the start, Boston was a leader in the history-making growth and cultural development of America. With its metropolitan area population of 2,500,000, the "Hub City" is the capitol of Massachusetts —one of the 13 original colonies. Modern Boston covers an area of 1,062 square miles. It is a beehive of industrial activity, and a world famous seat of learning, as well.

Two hundred universities, colleges and schools crowd within its environs. Its 224 public libraries are crammed with more than 4,000,000 books. In its five museums, Boston has collected historical and scientific data for the enlightenment of its people. It is a noble city—worthy of its eminent position as "The Birthplace of American Liberty."

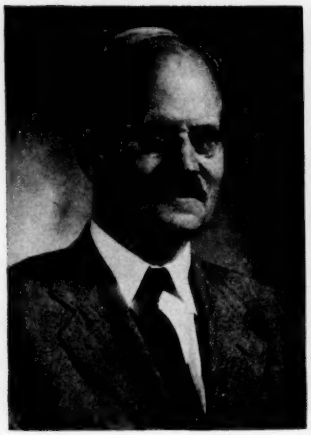
On behalf of the New England warehousemen and the American Warehousemen's Association Convention Committee, we bid you welcome! The keys to the city are yours. Our main hope is that by every standard of comparison you will find the 60th American Warehousemen's Association Convention a meeting without peer in the annals of the Association. We are doing our best to make it so.

CHRIS J. GRIMLEY
Convention Chairman
American Warehousemen's
Association



E. E. Seymour, Detroit, Mich.
Executive Committee, N.A.R.W.

C. E. Simmon, Oklahoma City, Okla.
Executive Committee, N.A.R.W.



Dr. S. C. Prescott, Boston, Mass.
Chairman of the Board, T.R.R.F.

Arthur N. Otis, New York, N.Y.
President, T.R.R.F.

Dr. H. C. Diehl, Colorado Springs, Colo., Director, T.R.R.F.

From NARW President Gagini

AS representative of upwards of 450 public refrigerated warehousemen, it is my pleasure to join the other hosts in saying, "Welcome to Boston and the 60th anniversary meeting of the members of AWA."

Thinking about the convention and what it means in the face of the present world situation, I've summarized my conclusions in the following way:

1—We're sizing up a critical era in both business and world affairs. The danger of calamity was never greater. Likewise, the determination and resourcefulness of American businessmen is at peak level. Conditioned by the stringencies of war and the competition of peacetime operations, warehousemen are in fighting trim and ready to meet the challenges facing them.

2—Every critical stage in the nation's history has proved to be an opportunity for progress in disguise. The reverse English of adversity means that we can come out of any "fix"—including the present one—bigger, stronger and smarter than we went in.

3—General MacArthur recently said there is no such thing as security. There is only opportunity. My idea of a good slogan for this meeting would be: "A time of opportunity, not adversity."

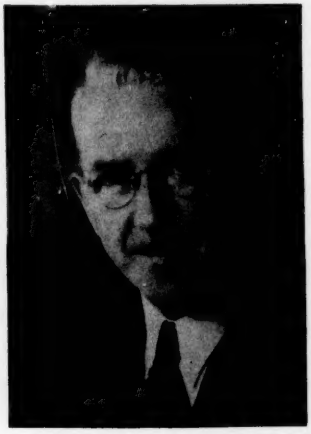
4—Tough thinking is the order of the day. Daydreams and wishful thinking are expendable. We know what we want. We believe in what we're fighting for. That attitude breeds the sort of conviction that spells success.

5—Businessmen are not afraid of problems—present or future. They live with them and thrive on them. In order to help solve some of the salient ones, the Convention program this year is loaded with "cold facts" and potential pants-pocket benefits. Warehousemen who really take advantage of the wealth of dividend-paying information available, will leave Boston full of fire, vinegar and new ideas. They'll be ready to meet the next business problem—and lick it handily, too!

In trade association activity, the day's challenges have also spelled opportunity in large capital letters. As a service organization, NARW finds in the emergency economy a greater need than ever for the services which it performs. To meet that need, the Association has expanded and streamlined its activities. With particular emphasis on government liaison and the fast dissemination of business news affecting the warehouseman, NARW is geared to provide its members with invaluable guidance through the maze of a regulated economy. Its membership is growing steadily and it faces the future with

(Continued on page 22)

R. C. Muckerman, St. Louis, Mo.
Vice-President, T.R.R.F.



Wm. A. Sizer, Chicago, Ill.
Treasurer, T.R.R.F.

AWA Announces Names of Convention Speakers

IN A LAST minute bulletin received just as the January issue went to press. A.W.A. General Secretary, William Dalton announced the following A.W.A. Convention speakers: Warren Whitney, Vice President of James B. Clow & Sons, Birmingham, Alabama. One of the nation's top industrialists, Mr. Whitney is noted for his ability as an inspiring and forceful speaker.

Honorable James K. Knudson—Commissioner of the Interstate Commerce Commission and Administrator of the newly-formed Defense Transport Administration, one of the hottest jobs in war-scared Washington.

Col. Martin J. Hudtloff—Director of the Transportation and Warehousing Branch of the Production and Marketing Administration, USDA. Col. Hudtloff is widely respected as an able administrator and an authority on warehousing problems.

Erwin H. Canham—Editor of the international daily newspaper, The Christian Science Monitor. In addition to his reputation as a journalist, Mr. Canham is nationally known as a radio and television news analyst and an authority on international affairs.

Your Association in 1951

WM. DALTON
Executive Vice-president National Association of Refrigerated Warehouses

LET'S face it frankly. In the critical months to come, N.A.R.W.'s number one job will be to help in every way possible to shepherd its members through the maze of governmental regulations brought on by war emergency operation.

Anticipating the need as early as July of last year, the N.A.R.W. staff wasted no time in setting up plans for meeting the need which was plainly developing. Defense committees were activated; emergency communications were set up; governmental liaison was tightened; and joint action with allied industries was begun in order to assure that every interruption in normal business routine would be met by an effective counter measure.

In 1951, further expansion of this protective activity is a "must" on the Association duty list. Some of the complicating factors due for a close and continuous scrutiny are these: government personnel in positions of authority with respect to operation of the nation's cold storages; new regulations designed to affect the industry; government requirements for cold storage space; manpower shortages as they may hamper storage functions; machinery and equipment allocations which might imperil the safety of vital stocks of perishable foods.

Regular Association Work Will Continue

Important as it is, the abnormal defense economy will not completely overshadow the regular functions of the Association. Annual conventions and shirt sleeve seminars on basic industry problems will be held. And membership promotion will not be neglected. Now, more than ever, warehousemen need the protection and guidance which trade association membership gives them. More emphasis will be placed on encouraging Associate Membership, too, by industries allied with refrigerated warehousing.

Staff work in Washington has undergone study and realignment in order to absorb increased service requirements. Time-saving machiney and equipment, such as folding, collating, stamping and sealing appliances have recently been installed, with a corresponding sharp increase in handling of the increased office work load.

Finally, public relations activity will maintain its current healthy rate of growth and effectiveness during the coming twelve months. Dissemination of industry statistics, improvement in format of existing publications, more active contact with the trade press and the general public, development of educational material on the process of refrigeration and the work of the Association—these are key projects on the PR agenda.

1951 bids fair to be one of the most active — and progressive — years in Association history. Problems are the raw material of opportunity. There never was a moment in the lifetime of the organization when the chance to be of constructive service was greater. And that's all we ask. Opportunity to be of service. We've got the inspiration and the disposition to do the job whenever it needs to be done.

The New Year looks like a big year —a big year responsibility-wise for N.A.R.W.—as we turn the calendar to the first month of 1951.

Charged with the responsibility of planning the program for the 60th Annual Convention of the American Warehousemen's Association, this group met in Boston to discuss their plans in detail. Reading from left to right, Committee members are: John O'Halloran, President of the Massachusetts Warehousemen's Association; C. J. Grimley, Jr., General Convention Chairman; Mrs. Sherman Whipple, Jr., Ladies Hospitality Committee Chairman; William Dalton, General Secretary of AWA; P. D. Burrill, General Committee member.

Practical Values in Spotlight AWA Convention Program

WITH the strongest emphasis being placed on "pants pocket" value in every segment of the program, plans for the 60th Annual Convention of the American Warehousemen's Association and the National Association of Refrigerated Warehouses are rapidly being crystallized, acording to C. J. Grimley, Jr., Chairman of the General Convention Committee.

Meeting from February 5-8, 1951, in the palatial Hotel Statler in Boston, an estimated 600 of the nation's leading warehousemen will face a solid four-day session of speeches, panel discussions, and "shirtsleeve" conferences on warehousing industry problems.

Pre-Convention Conclave With TRRF

For cold storage men, there will be a pre-convention conclave, jointly sponsored by the National Association of Refrigerated Warehouses and The Refrigeration Research Foundation. At this afternoon session scheduled for February 4, 1951, technical aspects of refrigerated storage will be considered with three prominent scientists addressing the combined gathering.

Dr. J. G. Woodroof of the Georgia Agricultural Experiment Station will discuss "Refrigerated Storage of Candies." Dr. E. A. Fieger will speak on "Refrigeration of Gulf Shrimp, with Special Reference to Cause and Prevention of Black Spot." Dr. Fieger is with the Louisiana State University Agricultural Experiment Station at Baton Rouge. W. T. Pentzer, prominent Agricultural Department scientist has chosen the subject, "Refrigerated Storage of Florida Oranges and Grapefruit" for his subject.

In addition to the scientific papers, the joint NARW-TRRF session will feature a talk by Frank E. Kearney, vice-president of J. Leo Cooke Warehouse Corporation titled, "Selling Space—In or Out of Emergencies."

Opening Session

Highlight of the AWA first day's program on February 5 will be the Opening General Session, to be held in the Ballroom with AWA President Horace W. Wilson presiding. The delegates will hear addresses by prominent business and government officials. Winding up the day's activities will be a "Get Acquainted" cocktail party, following adjournment of the afternoon-long general session.

Second Session

On February 6th, a NARW Session will be held, at which Association President J. L. Gagini will officiate. Features of the day's program will be presentations of defense operations by Vallee O. Appel, Chairman of the Emergency Plans Committee, and "Legislation—Last Year and This Year," by Chairman J. P. Johnson of the NARW Legislative Committee. Climax of the busy second day will be reached with the gala Family Party beginning with cocktails and dinner in the Statler Ballroom Assembly.

Third Session

"Shirtsleeve Sessions" will keynote the third day's activities, with Warehousemen's Liability and Claims; Group Insurance; Legislation; and Warehousing in a War economy up for discussion. The 60th Annual Banquet Wednesday evening, February 7, will top off the program for that day.

Mobilization Session

Saving the biggest kick for last, the Convention's "Mobilization Session" has been set for February 8th. Featuring a prize collection of guests and speakers, the "Mobilization" luncheon promises to be a banner affair with election and installation of new officers winding up the eventful four-day's activities.

Entertainment for Ladies

Special entertainment for wives of the delegates is being planned by Mrs. Sherman Whipple, Jr., Chairman of the Ladies' Hospitality Committee. During the time of the convention, they will visit world-famous Agassiz Museum, attend a concert at the Isabella Stewart Gardner Museum, take a specially-conducted tour through historic Lexington and Concord, stopping for luncheon at celebrated Colonial Inn and a tour of ancient houses in Concord.

Welcome to Boston

(Continued from page 20)

confident knowledge that it is doing a good job of the task it was set up to accomplish.

J. L. GAGINI, President,
National Association
Refrigerated Warehouses

From AWA President Wilson

SIXTY years ago, a group of far-sighted men got together and formed the American Warehousemen's Association for the purpose of promoting the interests of warehousemen, elevating the standard of the business, encouraging an enlarged and friendly intercourse among its members, and, generally, to advance the welfare of the warehousing business and all matters relating thereto. It is to this Association that the industry has come to look for help and guidance.

Sixty years of progress and craftsmanship in the careful storage and preservation of our nation's many commodities have followed and this needs recognition on this significant occasion.

It is more than fitting that this 60th Anniversary should be celebrated in Boston, a city which has, and always will have, many historical events to celebrate.

Our meetings over the years have aided materially in the improvement of the industry's services, in the expansion of facilities, in the adoption of modern methods, and in the application of research, and which have brought and kept our industry to the forefront in American business.

This meeting may well be one of, if not, the most portentious ever held. Greater problems confront us both at home and abroad and our combined ideas, energies and resources must be pooled to meet these problems. I believe it imperative that everyone who can possibly do so join with us, and on behalf of the Association, I extend a cordial welcome to all to attend the annual national convention in Boston.

HORACE W. WILSON
President American Warehousemen's Association

New Refrigerated Warehouse

MODERN refrigerated warehousing facilities have been completed by U. S. Growers and Shippers Service, Inc., Los Angeles, Calif. The new installation comprises six rooms with 25,000 sq. ft. of floor area. The one story structure was designed for rapid handling of merchandise by fork lift trucks and pallets.

Exterior view of the new addition to the Watertown plant of Quincy Market Cold Storage & Warehouse Co., Boston. Note retractible hoods which seal passage between car door and warehouse door when items are being unloaded. The original building had a 1,200,000 cu ft volume. The new extension adds 900,000 cu ft to bring the total over 2 million. Note wall at left with exterior sheathing of fluted aluminum sheets.

WAREHOUSE ADDS NEW SECTION

New addition of Quincy Market Cold Storage & Warehouse Co., Boston, Mass., makes available 75 percent increase in refrigerated space — used for packaged frozen foods.

DAVID L. ZAKON

An extension of the Quincy Market Watertown plant was built and placed in service during 1950. It follows the trend toward big rooms with high piling on pallets. Dimensions are 153 by 213 ft. with a 17 ft. clearance beneath coils and lights. Numerous interesting features were worked into the construction and equipment of the building to provide for rapid mechanized handling of goods in unit loads.

THE new section addition to the Watertown freezer storage plant of Quincy Market Cold Storage and Warehouse Co., Boston, was completed in July of 1950 and made available to the firm a 75 percent increase of total refrigerated space. Most of the added space is currently being used exclusively for storing packaged frozen foods and was necessitated by increased volume and a need for greater plant capacity to accommodate it.

Work on the foundation of the new extension was begun in December, 1949, and it was completed last March. It is interesting to note that the foundation and building were done under separate contracts and the foundation was almost completed before final plans for the building were drawn up in February.

Explains company engineer Theodore R. Love, who designed the structural work, general layout, and insulation, as well as supervising construction: "We planned to start building in March when the weather would become more favorable for construction. By starting on the foundation back in December we had that phase of the job finished when the work commenced on the superstructure."

"The site of the new building," he adds, "was a pond which generally had about 6 feet of water and about 6 feet of muck. But the summer of 1949 was a very dry one and helped dry the water up. We took advantage of a low water table by pumping the pond in December when there was very little ground water present. If we had waited until March, we would have had much more water to contend with."

Engineering Staff Handled Details

Roscoe E. Sherbrooke, the company's chief engineer, collaborated with electrical engineer Marcus F. Pinkham in designing the refrigeration and electrical equipment. All work on the job (drawing plans, awarding contracts, and all technical phases) was done by Quincy's own engineering department, a fact which made possible close coordination between all phases of the work. According to Mr. Love, it expedited progress on the work having someone on the job who was able to make decisions in construction immediately without having to refer to architect and owner and then have lengthy consultations.

Both contracts (for foundation and building) were awarded to the firm of Vappi & Co. Inc. of Cambridge, Mass. Insulation was by the Boston division of Mundet Cork Co. and W. P. Homans Co., Boston distributors of Alumiseal.

Of particular interest at the new building are the fluted wall panels, consisting of outer section of 16 gauge fluted aluminum sheets, one and a half inch thickness of fiberglass insulation, and an inner section of 18 gauge steel. They are designed to have the same insulating value as a 12 inch brick wall. The panels were furnished in sections (2 feet wide and extending the full height of the building) and each panel is connected with the adjacent one by two interlocking caulked joints and is supported by a light structural

Shipping and receiving corridor at the new section in the Watertown plant of Quincy Market Cold Storage and Warehouse Co., Boston. Note the wall panels with guards. This corridor is maintained at above 20 degrees and used for storage of pallets and as a vestibule between car and storage room.

steel framework to which it is spot welded. The inner steel sheet is not pierced at any point by bolts or rivets and serves as a vaporseal for the insulation.

Also worthy of note is the fact that floor slabs were designed so that by using special steel grillages it was possible to eliminate flared column caps, beams, or drop panels. This meant that the insulation under the first floor slab could be installed on an absolutely flat surface, with no fitting around beams, drop panels, or column caps.

The roof slab was designed in the same manner as the floor, which completely eliminated any possibility of air pockets and enabled the coils to be placed closer to the ceiling slab than otherwise would have been possible. Floor and ceiling design utilized a method developed by the Smooth Ceiling System of Minneapolis. It was felt at the Boston company that the saving in form construction and cost of insulation more than offset any added expense incurred as a result of using that system.

In addition, the overall height of the building necessary to give the required ceiling height was reduced several feet, resulting in further savings. Also they were able to put coils closer to the columns, making a larger percentage of the ceiling area available for coils.

Construction of Insulation

The insulation referred to above was constructed in the following manner: aluminum foil vapor seal was laid directly on the forms and a 6 inch layer of corkboard was cemented to the vapor seal by means of asphalt adhesive. The concrete structural slab was then poured on top of the cork which was anchored to the slab by means of its natural bond and by galvanized anchors rabbeted into the edge of each sheet of cork and extending about 2 inches into the concrete. The entire process of rabbeting each sheet of cork and coating it with asphalt adhesive was done in one operation in a specially designed machine. After the forms were stripped the vapor seal was exposed on the under side and the insulation job was complete with no overhead work necessary.

The new building consists of a first floor freezer and a basement cooler. At present the basement is not yet in use, but provision has been made for the day when it will be in operation. To provide for the time when it will be necessary to install conduits and piping on the basement ceiling, inserts have been installed in every column so that piping and wiring may be carried independent of the ceiling.

The basement floor is not insulated. However, in order to provide a vapor seal which will permit close control of humidity, the entire floor area is vapor sealed by means of two plies of asphalt paper and one ply of aluminum foil, each mopped in hot asphalt. This membrane is installed between 2 three inch concrete slabs.

Tentative provisions have been made in the basement for: (1) Installation of elevators or ramps (as future requirements may dictate) from the railroad siding. (2) Installation of a truck dock at the rear of the building.

Piping and Coils

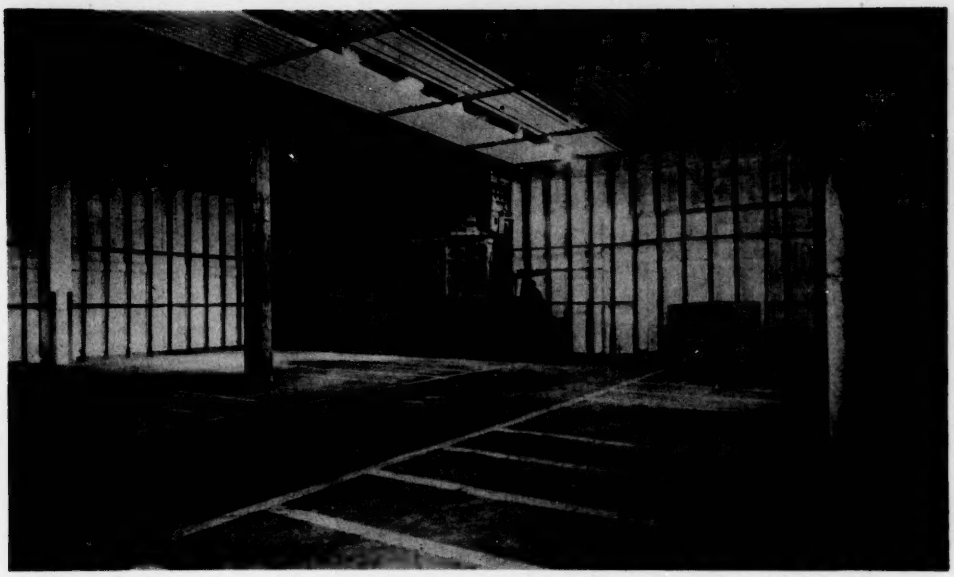
In the first floor freezer there are approximately 52,000 linear feet of two inch pipe. As previously noted, no piping has yet been installed in the basement cooler.

Coils run the entire length of the first floor, with 29 separate coils which vary from 6 to 12 pipes each. One of the pipes of each coil acts as a supply running from the supply main at one end of the room to a separate 3 inch header for each coil at the opposite end of the room. The remaining pipes in each coil return the length of the room to a similar 3 inch header which is then connected by a single 2 inch line to the brine return main.

Supply and return mains and all valves are at the same end of the room. Each main varies in size progressively which, with the reverse return system used, provides uniform flow in all coils. Length of each brine circuit thus is only twice the length of the storage room or about 360 feet. This type of coil has been found very satisfactory at Quincy Market. Pipe ratio is one linear foot of 2 inch pipe to 9.6 cubic feet of refrigerated space.

Room temperatures are taken by means of thermocouples installed at chosen locations in the room and connected to a recording instrument in the engine room. The engineer may read and record room temperatures at any time without leaving the engine room.

Room temperature is maintained at the desired level by keeping a constant ammonia suction pressure which automatically regulates the speed of the diesel driven compressors. The



Corner of storage room on first floor of new building at Watertown plant of Quincy Market Cold Storage and Warehouse Co., Boston. Note how stacking utilizes almost the whole available space. A grid of 5 in. steel channels protects the wall insulation and insures adequate air circulation around the goods in storage.

highest possible relative humidities are provided by means of the very large pipe surface in the room which makes possible a room temperature within 5 degrees of the incoming brine temperature.

After operation of a few months the stack lighting in use at the Watertown storage plant (described fully in the April 1950 issue of ICE AND REFRIGERATION) has proven very satisfactory and has lived up to expectations in providing better lighting for workmen.

The entire building was designed with a view to palletized operation. Material handling methods which have proven successful in the original Quincy building were utilized, with some modifications suggested by experience. The pallets of the new addition were constructed with a 3 inch instead of a 4 inch opening, because the entire operation is by use of fork trucks and without the use of pallet jacks where the 4 inch opening was necessary. This has resulted in better utilization of storage space.

Wide, Light Doors

Another change resulting from previous experience was widening openings into the rooms to 8 feet 2 inches. It had been found that much of the damage caused to flapper or vestibule doors by pallet loads was due to inadequate door width which resulted in loads striking the pallet door too close to the hinges. The wider openings have corrected this fault.

It was also found that much damage could be eliminated by reversing the usual trend of making flapper doors heavier and heavier (to resist damage) and constructing instead light weight doors consisting basically of a ¾ inch plywood panel. Experience at Quincy Market has indicated that flapper doors intended for

General view of storage room at new addition to Watertown plant of Quincy Market Cold Storage and Warehouse Co., Boston. One carload is stacked at far end. Note floodlights used for stack lighting. Conventional aisle lights can be seen in upper right. Arrows on floor mark spot where fork truck operator presses button on truck to operate lights in the next bay.

use by pallet trucks should be at least 8 feet wide.

Designed for Unit Loads

The column spacing and ceiling heights were also designed for unit pallet operation. Experience in the original building showed that an increase of ceiling height from 16 feet, 6 inches to 17 feet would be advantageous, and it was carried out in the new section. All lights, coil supports, valves, and other obstructions were kept above the 17 foot clearance.

The insulation under the first floor slab is 6 inches of corkboard laid in a single course (as previously described). Wall insulation is 8 inches of corkboard laid in two courses. Roof insulation is 12 inches of corkboard laid in two 6 inch courses. The partition dividing the shipping and receiving corridor and the storage room consists of 4 layers of 34 gauge and 2 layers of 16 gauge Alumiseal. The vapor barrier on the roof and walls, except where metal wall panels were used, consists of .003 aluminum foil. The insulated doors (by Mundet Cork Co.) are of light weight construction, utilizing glass fiber insulation. Each door has an insulating value equal to the wall in which it has been installed.

Other Interesting Features

Other interesting features of the new building are: (1) The roof is designed so as to remain flooded with 1 or 2 inches of water, resulting in a reduction of about 25 degrees in roof temperature. (2) The floor slab is designed for a live load of 600 pounds per square foot in order to provide for future continuance of present trend toward heavier and heavier unit floor loads.

(3) Railroad siding accommodates two additional cars which may be unloaded directly into the new building. Truck unloading facilities used in the original building also accommodate the new section. Passage between car door and warehouse door is sealed during unloading of cars by means of a retractible canvas hood which pulls back against the building when not in use.

(4) The inner walls of the storage room are lined with 5 inch structural steel channels which extend from floor to ceiling and serve the dual purpose of protecting the walls against damage and insuring adequate air circulation between the wall and the stored commodities.

(5) Lighting in the new extension is a dual system consisting of the usual aisle lights, controlled by

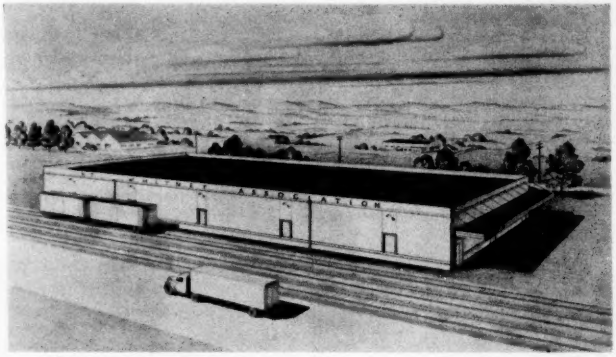
(Continued on page 65)

Controlled Temperatures Featured in New Cold Storage Plant

THE San Joaquin Valley's latest and largest addition of cold storage facility the Mt. Whitney Storage, is in the final stages of completion. This plant is located in the industrial district of the City of Exeter, Calif., the "Home of the Emperor Grape."

To those experienced in cold storage plant design and operation, the Mt. Whitney Storage reflects the owner's efforts to produce a completely modern plant where perishable products can be quickly placed under cold storage protection or precooled for immediate shipment to markets. Ample, paved yard space has been provided to accommodate the largest mobile hauling equipment, single trucks or several at a time. Multiple doors to the plant are available, enabling incoming and outgoing truck loading to be accomplished along with multiple car loading.

The plant embodies many innovations not usually incorporated into the ordinary cold storage plant. All floors have been chemically hardened to prevent the natural cement 'dusting' by which the cement dust is normally picked up by the circulating air and deposited over the fruit, dulling the natural glaze. All lighting fixtures subject to corrosive fumigation gases are completely sealed with gasketed assemblies preventing all 'sulphur to copper' contact. The entire exterior of the building was sealed against warm air infiltration by the application of a power sprayed adhesive 'membrane', a new feature originating with this plant. All duct work is constructed of marine grade plywood and completely assembled with specially plated screws. All floors, subject to fork truck service, are double reinforced which consisted of placing steel in both the top and bottom surfaces of the concrete slab.



Architect's drawing of New Mt. Whitney Storage at Exeter, Calif.

The plant itself is divided into four large and three smaller rooms (used principally for quick pre-cooling). All rooms are completely independent of each other and connected by large hallways which permit loading or unloading operations in any of the rooms without disturbing controlled conditions in any of the others.

Controlled Temperatures

Each room can be accurately and independently controlled for any temperature between the range of 28 and 40 Deg. F. with controlled humidity. Refrigerator cars can be loaded without warm, outside air coming in contact with the chilled fruit which enters the car through closed, canvas bellows.

Mt. Whitney has a normal storage capacity of 200 cars of produce with all hallways clear. When fully loaded, this plant still has available 4000 square feet of refrigerated hallway and 1200 square feet of refrigerated mezzanine floor for the storage and processing of sawdust for export shipping.

A casual visitor to this new Central Valley plant cannot help but be impressed by its neat simplicity, orderly operation and his complete esthetic satisfaction in viewing its tall rows of palletized produce, stacked with military precision. The plant was designed and its construction supervised by Thos. C. Kendall, Los Angeles.

NEW REFRIGERATOR-FREIGHT CAR

"Unicel," combination refrigerator-freight car made by Pressed Steel Car Company, introduces new engineering principle. Laminated plastic body provides lighter weight & larger capacity.

A NEW railroad freight car named "Unicel" which can be used to carry either refrigerated or ordinary loads has been designed by the Pressed Steel Car Company, Chicago, Ill. For use as a refrigerator car, ice bunkers or a mechanical refrigerating unit may be installed.

Details of construction and advantages are given in a handbook issued by the company. It explains that body of the car is made of laminated plastic construction and that since steel is used only for the chassis, the car is more than 30 percent lighter than the conventional freight car. Also it has a considerably larger capacity.

The body is a one-piece structure. It has a capacity of 4556 cubic feet against 2840 for the conventional refrigerator car. The increase in its capacity is explained by its length and rounded corners and the fact that it can be loaded up to the ceiling. It is 50½ feet long against the usual 40 feet.

Other advantages listed are lessened vibration, wide doors permitting use of lift trucks carrying loads on pallets, a device enabling loads to be strapped in sections to keep them from shifting, and more uniform temperatures.

Three new engineering ideas are incorporated in the car: lamination to give it strength with lightness; the development of strength through its molded shape; the Unisorb draft gear, a special assembly which cushions the car against shock imparted during pull and buff.

The new Unicel combination refrigerator and freight box car built by Pressed Steel Car Company, Inc., Chicago, Ill.

Body Construction

The basic practice in lamination, the method used for construction of the body, the handbook explains is to arrange and permanently bond layers of one of more materials so that the desired properties (i.e. lightness, hardness, tensile and compression strength, durability, etc.) are obtained. Laminite is an engineered wood panel consisting of a number of veneer sheets placed crosswise to each other and permanently bonded together under heat and pressure.

The shape of this new car, it is claimed, makes it posible to handle materials more efficiently. The construction can be compared to a tube or box girder supported at a point on each of the two trucks. The conventional car has a steel center sill extending the full length of the car along its center. On it the steel underframe is constructed. Atop the underframe, the box is built. The box encloses the lading while the underframe center sill supports the box and takes up the pull and buff in travel.

The body supports both the cargo and itself in the new car. It also transmits the forces of pull and buff incident in travel and renders them comparatively harmless to the car and the lading. Thus, the dead weight of the underframe center sill is eliminated. Modern aircraft utilizes a similar "molded-unit" principle of construction.

Construction Details

The basic laminate construction for the sides and roof is cross laminated plywood skin and a laminated core of ribbing space on 16 inch centers. (See cutaway view for details.) Although molded to form a single unitary structure, Unicel has hundreds of "dead air" cells throughout the car. This gives the car added insulation properties. (Thus, the name "Unicel," for "Unit Cell.")

The ends are made up of a laminated core of 2 x 4 inch with cross laminated facing, capable of sustaining a uniform load of over 265,000 pounds. The floor is composed of laminated faces with crossties, cross bearers and floor stringers forming the laminated core. Both on the inside ends and floor there is an extra layer of non-skid removable Tuftop, intended as a wearing surface.

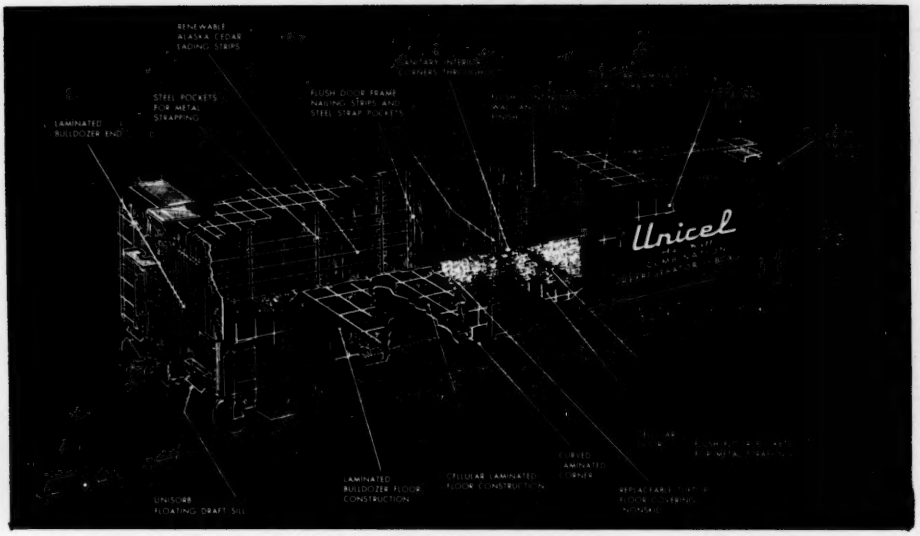
Side sills at the floor and roofs are cross-laminated angles or curves extending the full length of the car, 12⅛ × 7⅝ × 1 inches. End sill, top and bottom, are also cross-laminated angles, 12⅝ × 13⅝ × 1 inches extending the full width and height of the car.

The force-dispersing body bolster is integral with the car body and is laminated to a depth of approximately 6 inches extending approximately 6 ft behind and 4 ft in front of the truck center line.

The door is plug type. The patented door frame is of OH steel plate. It contains special shear grips in order to insure that the door frame is kept in true square. Clear opening is 8 ft wide and 8 ft 1 inch high.

The car thicknesses are as follows: roof—2⅝ inches; sides—2⅝ inches; door—2⅝ inches; floor—7⅝ inches; ends—5⅛ inches plus ¼ inch Tuftop Masonite equals 5⅜ inches.

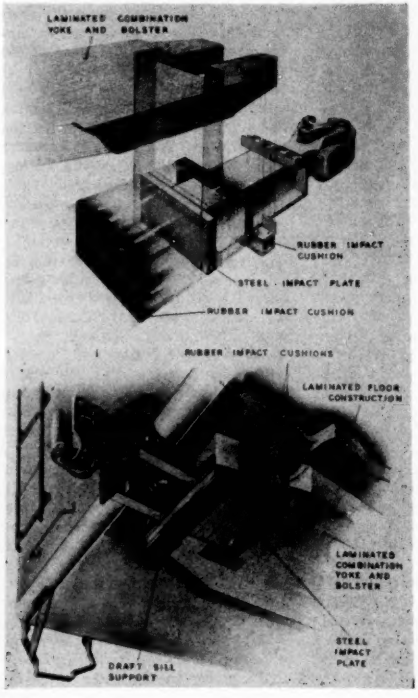
The measurements are as follows:


RENEWABLE ALASKA CEDAR SIDING STRIPS
STEEL POCKETS FOR METAL STRAPPING
LAMINATED BULLDOZER END
FLUSH DOOR FRAME NAILING STRIPS AND STEEL STRAP POCKETS
Unicel
LAMINATED BULLDOZER FLOOR CONSTRUCTION
UNISORB FLOATING DRAFT SILL

Cutaway view showing details of laminate construction of new Unicel car

Inside width 9 ft 2 in.; outside width 10 ft 3 in.; inside height 10 ft 0 in. by 9 ft 11½ in.; outside height 13 ft 7 in.; inside length 50 ft 6 in.; volume—4626 cu ft; truck center—41 ft 4¼ in.

In order to cushion impact forces there is a floating draft gear, named "Unisorb," a short sill, containing the draft gear and coupler. It has an approximate movement of 1¾ inches in either pull or buff. The sill is housed within the body bolster. The end of the draft sill has a steel impact plate welded to it 2⅛ in. × 22 in. × 12⅞. The impact plate is sandwiched between two 3 in. thick special laminated durable rubber cushions. The impact plates are inserted under slight compression in order to eliminate undesirable free slack.



Details of the "Unisorb" floating draft sill built into ends of car to cushion stresses and shocks by three inches of compressed rubber. There are no solid points of contact and shocks are eased and dispersed evenly over entire body of the car.

Details of this construction are illustrated in the photo drawing.

The use of rubber as a cushioning member is not new. Through the Waughmat application it has been installed in 88 per cent of the passenger cars built since 1941. What is new is the application of rubber cushioning for freight car service. The major disadvantage of the conventional center sill and draft gear arrangement is its tendency to go solid at impact speed around 5 mi/hr. Thus at higher impact speeds there is no longer adequate shock absorption; the result is damage to both the lading and car. With the rubber shock absorbers in the Unisorb, there is no solid point. Even crash speeds of 20 mi per hr are cushioned.

Maintenance and Repairs

The standard finish provides corrosion resistance to water, salt air and the usual acids and fumes encountered in industrial communities. The typical repair technique would be to remove the damaged area with a skilsaw, to the nearest rib in the core. An additional amount is sawed off over the rib to give bonding area. If necessary, additional back-up members can be laminated. A plywood sheet is fitted and bonded in place. Nails are applied to provide the necessary pressure for bonding. Most repairs become light repairs since they can be done "on the spot" without losing revenue earning time

while the car is sent to a shop for repairs.

Refrigerating Equipment

The car, fitted with ice bunkers, can accommodate 60 per cent more ice than the conventional ice-bunker refrigerator car. It was run through a long series of tests which exposed it for days under infra-red light, creating temperature over 165 F, simulating extreme desert conditions. The results were: with outside temperature increases of over 100 F the inside, cooled with ice, showed a temperature increase of only 4 to 6 degrees.

The principle of the mechanical refrigeration system used, known as the cold wall principle, briefly is as follows; Cold air is circulated in the space between a false wall and the inside wall of the car. Only enough cold air is introduced onto the lading to counteract the heat generated by the enzymic action of the fruits and vegetables. The lading is surrounded by a blanket of cold air. The lading temperature is reduced as its heat is absorbed by the circulating cold air.

Temperatures between 0 F to 55 F can be maintained as long as desired. The unit can be set as the specified temperature, say in Los Angeles, then proceed to New York with its load of fruits and vegetables at the desired constant temperature.

The diesel-generator that powers the Frigidaire unit is underslung. The system is equipped with special built-in gauges which indicate when refueling or resetting is required. The mechanical system itself consists of a diesel generator, a compressor powered by an electric motor, a system of circulating air coils together with fans and a 4000-watt heater system built into the coils for defrosting and for providing heat during winter weather.

Two Mechanical Systems

There are two completely independent mechanical systems built into the car, affording added security in the event of failure of one system. Either one of the systems are adequate to provide the car with a 30 degree temperature with an exterior temperature of 100 degrees. When both systems are operating together the permissible variation in temperature runs from 0 to 55 F and may be selected by the shipper.

Below the car are installed the two diesel fuel tanks, the storage compartment for the diesel generator, the Frigidaire system, and the controls for regulation by the shipper. Enough fuel is provided for approximately eight days of continuous operation. The diesel generator or the compressor may be removed by a built-in overhead monorail hoist system. The units themselves are cushioned against shock by an inner cabinet completely cushioned in rubber on five sides in a type of shockproof floating suspension.

No cost figures have as yet been disclosed. It was learned however that the price tag for the combination car will be about $9,000. While a conventional box car is priced at about $5,500, refrigerator car prices usually are $8,000 to $9,000.

Facilities at the company's Hegewisch, Ill. plant will be used to manufacture the new combination car. At present, the plant is under operation by a small pilot work-force. But if orders are forthcoming, company officials state the plant will employ about 2,000 workers.

Trend Shows Increased Development Of Mechanical Refrigerator Cars

CONVERSION to the mechanical method of railroad car refrigeration will proceed rapidly during the next few years, it was predicted by Joseph A. Numero, president of the U. S. Thermo Control Co.

According to Mr. Numero, Fruit Growers Express Co., Western Fruit Express Co., and Burlington Refrigerator Express Co. are currently using this gasoline-powered equipment, developed by U. S. Thermo Control under the trade name "Thermo King." More than a quarter of a million miles of rail travel have been "logged" by railroad cars equipped with Thermo-King, without loss of a single pound of perishable cargo, Mr. Numero reported.

Cargoes preserved by the system have ranged from apples, oranges, strawberries and potatoes to meats, fish, canned fruits and vegetables, frozen concentrated fruit juices, and frozen fruits and vegetables. Commercial runs have been made over the rail lines of both the United States and Canada under all weather conditions, official performance reports show.

Service Personnel Is Being Trained

Fruit Growers Express and its associated refrigerator car lines are now training mechanics and operating personnel to service mechanical refrigerator cars in the various territories served by the railroads with which these companies have contracts, according to John C. Rill, president. He also announced that his company has placed orders for 1,100 new refrigerator cars to be equipped with six inches of insulation throughout, designed for future conversion to mechanical refrigeration.

Frederick McKinley Jones, noted negro chief engineer of the U. S. Thermo Control Co., at a recent press conference outlined a recent development of the company in the field of humidity control. It is, he stated a refinement of the mechanical refrigeration process that is expected shortly to enable shippers of such products as lettuce and strawberries to avail themselves of the advantages of mechanical refrigeration.

Mr. Jones' invention involves a system of dampers that seal off the cargo compartment and stop the fresh produce from "breathing." These dampers do not swing into sealing position until moisture brought out by the preliminary cooling process has been carried away.

But once the product has attained the desired coolness, the "lid" goes on and the refrigerated air, for the remainder of the haul, is confined to the cold wall that envelops the car. To prevent stratification, a small auxiliary fan circulates air within the cargo space.

The humidity control device, likened to the "crisper" compartment in a home refrigerator, will eventually become standard equipment on Thermo-King units for both railroad cars and trucks, Mr. Jones announced.

Mr. Jones, holder of more than 40 patents on refrigeration and air conditioning devices, is a member of the A.S.R.E.

California Kids Had Snow for Christmas

THE City of San Gabriel, Calif., may be in the orange blossom belt, but the Chamber of Commerce decided the kids were going to have some snow before Christmas.

A small snowstorm was scheduled for Thursday before Christmas in the city park. Chamber officials ordered snow machines from a Hollywood studio and 50,000 pounds of ice was donated by a Pasadena ice company. The machines shaved the ice and blowers spread it over the ground.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

Howard Peterson, Yakima, Wash.

President National Association Practical Refrigerating Engineers

NEWS
OPERATING
MAINTENANCE
QUESTIONS -- ANSWERS

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Chicago • Illinois

Annual NAPRE Convention Presents Program of Practical Engineering and other Topics

THE Los Angeles Convention was notable for the good balance maintained between the different features and the interesting manner in which the engineering subjects were presented. Many of the local chapter members not only accomplished good results in the operation of the convention but also they took an important part in the program. The interest of the convention people in the different subjects was demonstrated by their high proportion of attendance at the sessions. It was held at the Hollywood-Roosevelt Hotel, Los Angeles, Calif., November 28 to December 1.

The first session was called to order by Dale Rycraft, Jr., president of Los Angeles Chapter who led the assembly in the Oath of Allegiance to the flag. He then introduced Harlan J. Nissen, vice-president, Terminal Refrigerating Co. whose work and interest in the chapter operations were described in appreciative terms by the chairman.

In a lively and informative address Mr. Nissen welcomed the convention to Los Angeles. He described the importance of the county in agricultural production and called attention to the numerous uses of refrigeration in processing and distribution of so many of these products. The attendants were invited to interest themselves in the refrigeration installations and enjoy the program prepared for them.

Former president, Walter Bernd, Sr., Washington, D. C. responded with appreciation to Mr. Nissen and said all the members were glad to meet in Los Angeles to honor President Emmett Quinn. He thanked the chapter and its representatives for the excellent meeting in prospect.

The chair was then turned over to President Quinn who declared that everyone in Los Angeles Chapter works and credit for accomplishments should be divided widely. He then presented his annual report which was in part as follows:

Report of the President

THIS convention brings to a close the 41st year of the National Association of Practical Refrigerating Engineers. Since the birth of the Association the refrigeration industry has undergone many changes and our Association with it's unpretentious inception has weathered the struggle for existence by keeping abreast with the advances—and is now the outstanding association in the field of commercial and industrial refrigeration. It is recognized as an association which tends to bring about a better understanding of practical refrigeration and one which serves as a "Clearing House" for helpful and authoritative information for the Practical Refrigerating Engineer.

The details of the Association's activities will be reported by the various officers and committees. I wish to take this opportunity to thank the officers, committees, and our official organ ICE AND REFRIGERATION for the cooperation and support extended me this year.

In the time allotted to me for the President's address I wish to present a few thoughts which I hope will be constructive for our organization. The real purpose of this Association is to encourage and assist in the art of engineering, installing, maintaining and operating refrigerating machinery and appliances in all its various phases and to establish standards pertaining to the efficient operation of the same.

We are on our way to become the greatest organization in the industry and we have a job of selling the idea to the individuals and management. Membership in this organization is essential to every engineer in the refrigerating industry and particularly to those in the commercial and industrial applications.

If we are to progress, we must improve our financial status. In the

past, our educational program was supported by large receipts for our exhibit. When it was felt that the exhibit was no longer adequate, we inaugurated the Operating Data Book as a means of revenue. The Data Book has been successful, but with operating cost mounting, we must have a new source of revenue. That source of revenue must come from increased membership and the organizing of new Chapters. Perhaps, we could set a goal of 3,000 more members and work to that end. Regional or sectional meetings will do much to give the Association publicity and encourage membership.

A. R. Carlson, Chicago, Ill.
Vice-president National Association Practical Refrigerating Engineers

Perhaps we could "Streamline" our applications to encourage membership. If 50 members throughout the Association will give of their time and effort as the Chairman and Vice Chairman of the Membership Committee did in 1950, we could achieve a goal of 3,000 members in one year. In short, the future of this Association depends solely on increasing the membership, to increase our finances so that we can support a well-balanced improved educational program, which will assist the Chapters and particularly the smaller Chapters in presenting interesting and entertaining meetings.

If we are to make this outstanding contribution to the industry, we must have a united effort.

As I stated previously, an important item in the finances of this organization is the yearly Operating Data Book which is supported by the Progressive Manufacturers and Distributors of Refrigeration equipment and supplies. The advertising in the Data Book is the medium through which the Association furnishes valuable educational material to each member. Each one can help by acknowledgment of the advertisement when purchasing equipment or requesting additional information.

Program Provides Valuable Information

Many of you have traveled far to attend this meeting, and the benefits derived will depend solely on your individual desires and attention. The educational program will be beneficial to every visitor for the subjects are so varied that they cover almost every conceivable phase of refrigeration engineering. Possibly one paper or even one remark may prove the turning point in your engineering experience for they have been prepared by men who are recognized as leaders in their line. They are men who by many years of training and experience, are not only prepared to analyze and discuss the subject matters in their papers, but are also the most noteworthy group of engineering talent that has been grouped together on one program. They have come prepared to do you a service—to assist you in solving some of your problems, and your strict attention will encourage them in their sincere endeavors.

The exhibit at this Convention is small, but interesting and educational. Each exhibitor feels that he has a message for you and that is why he has assumed the expense connected with such advertising and you should repay his interest in you and the organization by a visit to each booth.

As the 41st year of this Association draws to a close and we approach the 42nd, let us keep up the enthusiasm which we have displayed in the past. Nothing great was ever achieved without enthusiasm. It is a vital quality. It should not be wasted. It should be carefully conserved and applied where it will produce the best results. The most important item in a man's life to make good in his occupation is enthusiasm. Show me a man who believes with his whole heart and soul that his occupation is the best on earth and I'll show you a man who is pretty sure to make good. Enthusiasm is the proof that a man believes in himself and his occupation as the man who believes in himself is the man who makes others believe in him.

Gentlemen this is your organization which can be, and will be, just as valuable as you make it. If you sit quietly by absorbing all you can get out of it, but contributing nothing, then our Association will be a failure, but, if each will try to give something that will help encourage your brother engineers, then we will have a successful organization.

Let us forge ahead with the N.A.P.R.E. The present day successful engineers were not born that way. Their rise was gradual, step by step higher in their profession until they commanded the respect of their fellow engineers, through great deeds and better engineering effort.

In conclusion, if we, as members, cooperate with the National Officers and our Local Chapters, it may well

be said that anyone connected with the Refrigeration Industry in a technical, engineering or operating capacity should find membership in the National Association of Practical Refrigerating Engineers a most enjoyable and profitable experience.

Report of the Secretary

PRESIDENT Quinn then called on Secretary Emerson Brandt for his annual report which included the following:

It has been evident to all that promotion of membership on a national basis was more intensive this year than in the years immediately preceding. The details of the 1950 contest will be given to you by Ray Burnett. Since his chapter won the contest he may be modest in describing what they did. This is the fourth straight win for Los Angeles but they did not appear to be running out of enthusiasm or drive. The 71 members they added this year indicate that their procedure is effective and will produce results in a large way.

For this reason you are urged to make careful note of the methods he describes in his analysis of membership building at the chapter operating conference on Wednesday morning. This year many chapters cooperated in furnishing prizes for the pyramid which added drive to the contest. Probably this type of contest will not be repeated immediately but the value of extra incentives has been amply demonstrated. To obtain the best results in the future it is evident that chapters will want to arrange local contests to spark their drives.

This year excellent cooperation was received from officers and members in most chapters to obtain prompt renewals of membership. It reduced the office work locally and nationally and aided in strengthening chapter operations. Let's obtain the same beneficial results in the future by continuing the good work.

Chapter Operations Manual

During the present year the operating materials published by the national office were extended to include a Manual on Chapter Operations. This manual provided ideas and suggestions gained from experience over a 16 year period. The effectiveness of the practices detailed in the manual has been demonstrated in the past. We trust the material will be used and applied in the chapters because the methods and operations followed to a large extent determine the value of the chapter to its members, as well as its success. At the same time we do not wish to imply that the manual contains the last word on the subjects covered. We hope to have the benefit of the experience and suggestions from members to expand and enlarge the usefulness of this manual.

Annual banquet of 41st annual convention National Association Practical Refrigerating Engineers, Hollywood-Roosevelt Hotel, Los Angeles, Calif. November 29, 1950

Now in preparation in the national office is another manual on Membership Building. It will describe the most effective methods for the guidance of chapter membership committees in all phases of the work they do. If our chapters are all well organized with a good educational program in operation and follow the time tested methods in membership building, then we can expect that they will be strong helpful units in the refrigeration field of their areas.

Mid-West Conference

In the spring the St. Louis Chapter organized a midwestern regional conference. A good program of engineering subjects was arranged by Ken Holaday, Les Fleiter and their coworkers in the chapter. Professor Venemann was featured on the program and an outline of his presentation was published in our section of the October issue of ICE AND REFRIGERATION.

Based on the success of this first venture, St. Louis Chapter is considering a similar event next spring. It promises to become a valuable addition to refrigeration engineering activities in the area.

41st Convention

As the convention proceeds you will enjoy and draw benefit from many fine papers and discussions presented here. The members of Los Angeles Chapter took a keen interest in the program and it will be noted that a number of valuable features are being handled locally. We also acknowledge the cooperation of the other speakers and members of the panels who are giving us the benefit of their knowledge and experience on this program. Professor Venemann as usual is giving us a thought provoking and informative paper. It is unfortunate that the majority of our members are not able to attend the convention. These members will be especially interested in the printed papers which will be published after the convention. Inquiries have already been received in regard to publication of the papers and we are glad to repeat that they will be published for the benefit of the entire membership.

The major responsibility for the Los Angeles Convention was shared by the following:

Regis Gubser, General Chairman
E. L. Nelson, Vice General Chairman
Arrangements, E. T. Quinn, Rudi Kettler
Publicity, George Paulick, W. F. Losch
Exhibits, D. H. Byl, Frank Elliot and H. N. Royden
Entertainment, Frank Eccleston, L. H. Benedict, J. C. Schobert and Frank Muzzy
Finance, W. F. Losch, Rudi Kettler
Ladies Committee, Mrs. Herbert Royden, Mrs. Regis Gubser

They have been working for many months in preparation for this meeting. The result of this work will be more and more evident as the convention proceeds. These people not only worked hard to accomplish their appointed tasks but they also demonstrated cohesion and cooperation with the others in their official group and with the national organization. All of us are indebted to them for what they have accomplished.

An added pleasure at this convention is to welcome William Finnegan back to health and to attendance here. We look forward to his regular attendance in the future.

Operating Data Book

In connection with the Operating Data Book you will hear from the chairman of that activity. He will give you the details of the work done by the committee and its overall accomplishments. It is a pleasure, however, to acknowledge the good work by so many of these people on the committee. Their efforts were of paramount importance and made it possible to publish a 1950 edition which was representative in every respect. The work these people have done regardless of other demands on their time is a major contribution to the association. Actually a number of the representative companies in the industry are aware of the advertising and promotional value of this book but it will always require selling on the part of the association membership to accomplish the needed volume of advertising.

Finances

The money which was saved last year on travel and convention expense has been spent this year. On this basis we have come out about even over a two year period. On the other hand, there is no reason for adopting a complacent attitude because costs are continuing to rise and we have to meet the challenge of the situation. The best way to meet it is through an increase in membership of significant proportions. This increases overall income and reduces the unit cost to serve each member.

The secretary, according to the financial rules of the NAPRE receives and accounts for the income while the treasurer draws checks to pay invoices approved by the president and secretary. (A summary of the income during 1950 was then presented).

The books of the secretary and treasurer have been audited and found in balance. The balance sheets and summaries together with supporting details are presented for the attention of the Auditing Committee.

General Operations

Two years ago the association adopted a manual of officers duties which divided the various responsibilities and tasks between the different national offices. It did not really lessen the work of any one but rather it added duties to many offices which previously had little direct responsibility for national work. The officers have followed through and accomplished more as a result.

President Emmett Quinn this year had all the usual tasks plus a number which were added by circumstance and his initiative. No one in his office has been more prompt to handle all the affairs and correspondence. In addition to this was his extensive work on membership building and the added efforts entailed by his key position in the chapter entertaining the convention.

Meanwhile he kept his eye on the long range developments in the association. The special session on chapter operations is a new venture developed by President Quinn to make better use of the resources of the organization and expand its field of services and operations. It deserves the support of every member.

Key Men

For the first time in 30 years a new name appears as secretary-treasurer of Pittsburgh Chapter. Louis Mantz has retired from that post in his chapter. I wish he were here to receive personal acknowledgment of his good work. He has not retired from the association because he carries his honors and his years lightly. We must express our appreciation from a distance but it is none the less genuine.

These men who carry on the business side of the chapter affairs do not receive the credit and appreciation they deserve. Perhaps it is because they regularly request that we pay our dues and we feel they should be pleased when we give them what they ask of us. Their work, however, is most important. If they do not carry it on properly their chapter and the whole association eventually are handicapped. Through the years those chapters which enjoy the continuous service of their financial officers obtain better overall results.

It is a pleasure, officially to recognize the valuable services of the veterans such as Charles Conley, Memphis; Leon Adams, Detroit; Harry Bonter, Colton; Elmer Johnson, Tacoma; Jay Watson, Chicago; Orman New, San Francisco; Elmer Toop, Yakima, as well as those others who are on their way in this work.

Treasurers Report

The Annual Report of the Treasurer was presented by Leland Kenagy. It was an accounting of the expenditures during the fiscal year. He reported that the bills and certifications on these expenditures had been checked and that the books had been audited and balanced.

1950 Operating Data Book

The report by Chairman Erich Utescher described the work of the committee:

"All of you have received copies and I trust are using the Operating Data Book daily. The ten books published to date make quite an impressive stack of engineering information and material. Here I am referring not alone to the articles and the questions and answers. The advertisers also give us much information and they offer more to us if we will only write and request it.

"Actually you have needlessly handicapped yourself in any year in which you have not written to the advertisers to secure the bulletins and catalogs they offer to us. Keep this in mind when you are thinking of ways to increase your knowledge of refrigeration and build up your store of reference materials.

"In total the present book was about the same as the previous one. It was not easy to maintain this volume. The results were based on the good work of the committee and the 8 chapters which assisted. As usual they were led by our good friends in New Orleans who were out in front by quite a margin. Other chapters that aided were Chicago, Los Angeles, Memphis, Pittsburgh, St. Louis, Tulsa and Seattle. We will be glad to have the others join in the good work.

"When I tell you that many of the members of the committee worked with up to 60 or 70 prospects you will realize they really worked. They followed through to the most complete extent possible and that is why we had a good book in 1950. It is a pleasure to acknowledge the work they did. The committee included the following men plus the officers:

Operating Data Book Committee

Walter E. Bernd, Sr., Washington, D. C.
A. M. Casberg, Edinburg, Texas
Victor Crothers, Seattle
Roland Disler, Detroit
Leroy Etzel, San Francisco
William Finnegan, Los Angeles
John Glenn, Beardstown, Ill.
H. T. Holbrook, San Francisco
A. E. Wegener, New Orleans
R. A. O'Neill, Corpus Christi
H. A. Simpson, Memphis
E. B. Urann, Chicago
R. C. Walther, Seattle

"In closing I would urge all members to join with us to further increase the interest and field of usefulness of this book which has already accomplished so much for our educational program."

NAPRE Department

Membership Contest

A DESCRIPTION of the energy and zeal with which Ray Burnett promotes membership activities was included in his introduction by President Quinn. Mr. Burnett then took over to summarize the 1950 contests and present the prizes to the winners. With 19 new members to his credit, Don Byl of Los Angeles won the pyramid of prizes contributed by the various chapters. Among these was an auto robe, Detroit; ham, Chicago; box of apples, Yakima; box of oranges, Colton; canned foods, Pittsburgh; frozen foods, Stockton-Modesto; tuna, Los Angeles; pecans, Memphis; oil, Tulsa; sugar, New Orleans; dried fruits, San Francisco; leather belt, Dallas; salmon, Tacoma; and a mystery package from Seattle. To these was added the local prize of an automatic roaster.

As the leading member builder in the smaller chapters, Charles Conley of Memphis received the numerous prizes set up in the supplementary group. Many of them were duplicates of the items included in the original pyramid. As a consolation prize a hand tooled leather belt with silver buckle was presented to V. A. Stubblefield, Los Angeles, who secured 16 new members.

Mr. Burnett thanked the chapters for their contributions to the pyramid and for the good work accomplished during the year on membership building. He urged all chapters to instill spirit and enthusiasm in their membership drives next year.

The Blair Memorial Foundation was described by Arthur Hess, president. Established in memory of Jessie C. Blair, teacher of refrigeration and a member of the N.A.P.R.E., the foundation is engaged in providing a refrigeration laboratory and library in connection with the Los Angeles Trade Technical College.

Engineering Sessions

THE first engineering session began with a dramatization designed to answer some of the questions involved in purchasing the right evaporator to refrigerate cooler and freezer rooms. All of the actors were drawn from the refrigeration industry in Los Angeles but these amateurs gave out a considerable amount of information on the subject at hand.

In the first act, Herbert Royden and Ray Burnett took the parts of owner and engineer of the hypothetical plant. They presented the require-

ments for the room to be refrigerated. It was a general purpose cooler room of 90,000 cu ft capacity with an estimated maximum load of about 20 tons with a four ton holding duty.

The salesmen-actors who wished to supply equipment for the room discussed the advantages and disadvantages of a particular type of equipment although many of them actually represent companies manufacturing a full line. Walter Hilton, Thermal Products Co., discussed the advantages of installing a ceiling mounted water defrost installation with a number of units spaced down the long wall of the room. He stressed the saving of floor space, rapid defrosting and a good pattern of air circulation provided by the multiple units.

David Nurse, R. B. Holland Co., promoted the use of the floor type unit coolers. He described the good temperature and relative humidity control to be obtained by having evaporative pressure regulated from a room thermostat to increase temperature difference under heavy loading. The coil and the unit were to be split in two parts so that the surface area could be suited to the relative humidity requirements.

The floor type unit with brine spray over the coils was recommended by Hugh Strange, Super Cold Corporation. He pointed out that this general purpose room would have considerably less than full load much of the time. The space occupied by the unit thus would not be of major importance. With proper treatment of the brine, the life of the unit and coils would, he said, be quite satisfactory. He went on to describe the details of the recommended unit.

Freezer Room

The dimensions of the freezer room were 80x120x18 ft. high. The temperature to be carried was minus 10° F with a relative humidity of 85 percent. The total load was 100,000 Btu per hour to carry frozen fruit, vegetables, eggs and such products. These requirements were discussed by Frank Elliot, Union Ice Company and William Brittin, Brittin Engineering Company who were plant owner and engineer in the second act. The first salesmen desiring to equip the freezer room with an evaporator was Gene Smith, C & S Equipment Company who recommended a floor-mounted unit with air ducts to supply the air to the room on an even pattern of distribution. He described the features of the refrigerating unit including the impulse pump which uses flash gas pressure to circulate liquid refrigerant through the coils of the unit.

That the room had a rather light load in relation to its size was pointed out by Robert B. Holland, R. B. Holland Company. This, he said, would consist principally of heat transmission losses, and the means used to refrigerate the room should maintain an even temperature. He called attention to the fact that frozen foods inside metal cans have been shown to lose moisture under fluctuating temperatures. One of the points stressed by Mr. Holland was the maintenance of clean coil surface in order to carry a steady temperature and he proposed a system utilizing hot gas defrosting with liquid re-evaporation. The unit was rated at 21,000 cfm air circulation.

According to Peter Askew, Thermal Products Co., a group of water defrost ceiling coils set near the long wall would give proper circulation across the room. These coils would be maintained at the proper temperature with a pressure regulating valve to maintain the high relative humidity required. Mr. Askew said there would be no difficulty throwing the air across the room from these units.

Pipe coils for refrigerating the room were recommended by Ralph Moore, California Consumers Corp. He suggested a 6500 ft coil made up of 2 in. pipe. He acknowledged that some engineers might fear this coil was too long but he showed examples of similar coils and gave the gas outlet velocity as 3000 ft per minute. Controls recommended were thermostatic expansion valve arranged for top feed and an evaporator pressure regulator operated by a thermostat. The top feed to the coil was suggested to prevent trapping of oil that might pass over to the coil. A number of pipe coil installations were shown and Mr. Moore emphasized the importance of radiant heat pickup by the coils as well as the elimination of fans, motors and bearings which have to be maintained and may give trouble. The audience participated in the question period in which various speakers answered a number of questions on evaporator design and installation.

Vacuum Pre-cooling

A new method of chilling vegetables in preparation for shipment to market was described by Prof. Harold Hayes, head of the Mechanical Engineering Department, University of Santa Clara, Calif. He outlined the four present methods of pre-cooling produce to remove field heat. These are car pre-cooling, house pre-cooling, immersion or hydro-cooling and top icing. A new fifth method is high vacuum cooling and this paper discussed the theory, design, and the present and future of the method.

Prof. Hayes first showed the relationships of water temperature, pressure and volume in the range utilized in the vacuum equipment. He described the 90 lb. steam jet system which pulls a fairly high vacuum on the pre-cooling chamber and holds it for the twenty minutes required to cool lettuce in the crate. The plant he illustrated and described has three large steel cylinders 7½ by 50 ft long. The lettuce is carried in on small trucks and can be chilled to 32 F by the vacuum at the rate of 600 crates of lettuce per hour. It is the moisture evaporated from the lettuce which provides the cooling, but Prof. Hayes declared such a small amount of evaporation is required to provide chilling that the moisture loss is not noticeable. A survey of buyers, he said, indicates that some prefer vacuum-cooled lettuce to that cooled by other means.

Figures were given on the operation to show that the vacuum chilling and packing saves money. It may result in the use of fibre cartons for shipping lettuce and other vegetables.

Bureau of Refrigeration Information

In the evening of the first day of the convention, the Bureau of Refrigeration Information had a lively two-hour session to answer the questions presented to it by the convention people. Heading the bureau was Frank Elliot of Union Ice Co. who had established his reputation by successful conduct of similar question projects in Los Angeles Chapter.

Associated with him on the panel were Leroy Etzel, San Francisco; Howard Petersen, Yakima; Leo Vivien, New Orleans, and Prof. H. G. Venemann, Purdue University. As soon as the program opened a stream of questions began to come from the audience to be handled by the group on the panel. It appears that people still have trouble with condensers, controls, insulation, and numerous other features of refrigeration plants. While members of the Bureau were ready with answers the audience also participated in many of the problem analyses.

Delegates Breakfast

A new idea to improve general association operations was introduced at the convention by President Quinn.

It was a Breakfast Conference in which 11 different phases of operations were discussed with suggestions given for general use by all members. Numerous good ideas were presented and it was the concensus of those attending that the affair should be repeated each year. Summaries of the ideas and suggestions from the different speakers will be published in an early issue.

The trophies representing first place in the membership contest were presented to Dale Rycraft for Los Angeles and H. W. Hedburg for Stockton-Modesto chapter.

Wednesday Morning Session

OPENING the second engineering session was William S. Orton, chief engineer, Nels H. Rosberg Inc., San Francisco. Mr. Orton gave an illustrated paper on the erection and testing of refrigerating equipment. He said it is the function of the refrigerating engineer to take the materials, labor and tools and erect the machinery and equipment as planned and specified. To accomplish this requires the efforts of an expert organizer who plans the work so that a finished plant is evolved by expending a minimum of time and material. Further, the engineer must be very alert for errors, discrepancies, or oversights on the part of others. Proper plans include not only the items previously mentioned but also involve scheduling work so that it meshes with the work of other crafts which may be engaged on the same project.

The erecting engineer must arrange the flow of materials to the job site and a necessary labor supply. He must acquaint himself with local ordinances, rules and regulations covering the erection of refrigerating equipment and at all times he must be an expert on safety engineering. Mr. Orton went on to describe how the erecting engineer can learn and develop the qualities which will assist him in his work. Then he described elements of erecting and testing procedure which produce good results.

Modern fruit storage practices were described by A. Lloyd Ryall, senior horticulturist at the United States Department of Agriculture, field station in Fresno, Calif. During the past twenty-five years, he said, there has developed a realization that there is an optimum storage environment for each commodity and that the requirements for one product or even one variety may differ considerably from those of another. This awareness of the inherent differences of commodities in their response to storage conditions, together with a vast amount of applied research aimed at the determination of the ideal temperature, relative humidity, air movement, and ventilation for each product and intensive study of supplementary treatments for delaying aging, controlling physiological disorders, and reducing decay, has resulted in the storage practices referred to as modern. Mr. Ryall detailed methods for different fruits. He said that storage research will continue to develop information on commodity responses, and refinements in storage facilities and practices will result.

Third Session

SEVERAL speakers collaborated on various phases of the general subject, "Protection of Life and Property in Refrigerating Plants." This subject was especially appropriate because of the tense situation faced by this country and also because manpower and productive equipment must be preserved at all costs in the days ahead. Fire prevention methods were discussed by William Osborn, safety engineer, California Consumers Corp., Los Angeles. He placed the annual fire loss at 652 million dollars and emphasized the interest of the worker in fire prevention because 40 percent of the burned industrial plants are not rebuilt and the workers lose their jobs. The principal causes of fires were described by Mr. Osborn who said that electricity comes first. Mostly they spring from improper installation and maintenance of electrical circuits and equipment. Trouble can be avoided by making sure all electrical work fulfills code standards.

Other causes of fire were cited and Mr. Osborn explained that fire damage frequently can be minimized if everyone has proper instructions on use of fire extinguishing equipment. He gave the classification of the different types of equipment and told how familiarity and knowledge of its use might be gained by having an annual fire prevention event. At this time plant personnel could use equipment to extinguish fires and utilize materials normally wasted in discharging the equipment. In concluding, he gave examples of good work in fire prevention and emphasized the value of good housekeeping.

The bursting of vessels, lines and machines was discussed in a paper by Elmer Johnson, California Consumers Corp., Los Angeles. While he saw no reason to go into a mournful catalog of accidents, Mr. Johnson challenged all engineers to study operations and correct causes of accidents. If this were done properly there would not be so many which recur.

Bursting and breaking, he said, usually result from six causes which are: vapor pressure, liquid pressure, high velocity, expansion and contraction, vibration, liquid slopover. Examples of ruptures in lines and equipment springing from these various causes were given by Mr. Johnson. Remedies were shown to be available through the use of pressure limiting devices, proper operation and modifications where experience showed the need for changes. For instance vibration, he said could be reduced by providing adequate size lines. It was suggested that liquid slopover preferably is prevented by having accumulators of proper size at each evaporator supplemented by the system accumulator with provisions for liquid return. Mr. Johnson analyzed reports of accidents and in some cases took issue with a conclusion reached in the reports. In summary, he recommended use of the standard safety appliances and methods with proper maintenance of the equipment and all automatic controls. Good plant design and operation, he believed, would eliminate most troubles with bursting and breaking of equipment.

Safety in Aviation

The aviation industry which has established an excellent record in accident prevention furnished the concluding speaker of the series. He was Lee Johnson, safety engineer, Northrup Aircraft, Inc. who analyzed general causes of accidents. He said that 10 percent of the accidents cause injury to personnel but despite this low percentage every accident potentially can injure people or equipment. Frequently by analyzing non-injury accidents, it is possible to make corrections and stop further troubles in this regard.

The various causes of accidents were analyzed and Mr. Johnson attributed 88 percent to the human element. Older men, he said, are the safest workers. Those above 50 have less accidents than younger men and their production record is as good as that of any age group.

Mr. Johnson drew from the experience of the aviation industry to show how well-coordinated accident prevention work will reduce the cost of accidents and compensation insurance while production continually increases. During the war the aircraft manufacturers set up a system for exchanging ideas on accident prevention and working to reduce accidents. They

achieved their goal with a 54 percent reduction in accidents while production of airplanes increased 600 percent. At the same time compensation insurance rates which were $1.19 in 1939 had been reduced to 70 cents in 1945 and five years later were down to 56 cents. Some of the specific methods used were detailed by Mr. Johnson. He told how strains and sprains which account for many injuries can be reduced. In some cases the remedy proves to be quite simple and the benefits in reduced injuries are quickly realized. In fact Mr. Johnson said that good results in accident prevention always will follow a well-planned activity because there is no difference between production processes and accident prevention activity.

Mechanical Refrigerator Car

The performance of a mechanical refrigerator car designed and placed in service by the Santa Fe Railroad was described by J. F. Daly, manager of ice plants for that railroad. Increased shipments of frozen foods and other commodities have prompted railroads to investigate new refrigeration methods although for most products, ice provides optimum temperature with economy and rapid cooling which permits harvesting fresh products under more mature conditions.

During the past four years the Santa Fe Railway has designed, built and tested a general purpose refrigerator car which is completely automatic and operates as an independent unit. This is a standard 40 ft refrigerator car with the ice bunkers eliminated and the space provided at one end for the refrigeration equipment. Its major units are the six cylinder 52 hp Diesel engine running a 15 kw alternator by direct drive and a four cylinder Freon 12 compressor. This compressor has a three ton rating at car temperature of between 10 and 20 degrees below zero with a sixteen ton capacity for pre-cooling of fresh produce.

Mr. Daly described how the car was equipped with complete test instruments so that the conditions in operation could be determined. Then he gave some of the results obtained by the car in service. It pre-cooled a load of oranges 20 degrees in seven hours. With 111 F temperature outside, the interior of the car was maintained at minus 11 F. In hot weather the cooling system uses about 1½ gal of fuel oil per hour. The system also provides heating service to protect loads against freezing where this is desired.

Fourth Session

A WELL-ILLUSTRATED lecture on do's and don'ts of electrical maintenance was presented by Regis Gubser, chief engineer, California Consumers Corp. Mr. Gubser had made a broad study of numerous refrigerating plants to find examples of good and bad operating and maintenance procedure. These were presented in an informal manner with complete description of the potential troubles which result from bad or inadequate procedures. Discussion, however, was not directed at negative ideas for the most part. Good practice was shown in a number of the illustrations and proper methods were thoroughly explained.

Mr. Gubser emphasized that regular inspection and checking of electrical equipment and circuits pays good dividends. For instance some illustrations showed conditions which produce heating of fuse contacts which have not only resulted in burned-out fuses but also sometimes impair the operation of equipment and cause fires. Where equipment is added and the power load in the plant is not fixed, he recommended regular checking of the power circuits to avoid over-loads and excessive reductions in voltage. This and numerous other features of the subject were well illustrated and explained.

The role of large centrifugal refrigerating compressors in industry was described by Prof. H. G. Venemann, Purdue University. He recounted a number of important applications of centrifugal machines to industrial processes, especially in petroleum refining work where large machines are now being installed in considerable volume. Prof. Venemann pointed out that the dollar value of centrifugal machines recently installed is a match for the volume in reciprocating machines unless those in the commercial field are included.

He proceeded with an analysis of the basic factors in centrifugal design and construction. Then general data was given on the refrigerants used. He said that there is a practical minimum volume rating for machines using various refrigerants. For the ammonia machine, this figures about 400 tons while it is about 52 tons for the Freon 11 machine. The former would have eight impellers while the latter would have only one. In summary he listed the advantages of centrifugal machines as smaller size and weight, because of the high speeds involved, no oil in the system because bearings are outside, turbine drives can be used directly and high speed motors can be utilized. A number of machines were illustrated and described by the speaker.

Officers and Directors

President Quinn took over as chairman of the meeting and called for the report of the Nominating Committee. Chairman George Koehne of that committee read the report which placed the following in nomination:

President, Howard Peterson, Yakima, Wash.

First Vice-president, A. R. Carlson, Chicago.

Second Vice-president, Alvis Clay, Memphis, Tenn.

Treasurer, Leland Kenagy, Newton, Kans.

Sergeant-at-Arms, H. B. Branham, Pocatello, Idaho.

Board of Directors: Chairman, Leo Vivien, New Orleans; S. A. Cole, Chicago; Leroy Etzel, San Francisco; Regis Gubser, Los Angeles; Elliott Hallowell, Dallas; Bert McKenna, San Francisco.

Chairman of Educational Committee, H. G. Venemann, West Lafayette, Indiana.

Chairman of Membership Committee, Ray Burnett, Los Angeles.

The report was accepted by vote of the convention and then the chairman asked if there were any further nominations from the floor. None were proposed; by unanimous vote the nominations were closed and the candidates were elected by acclamation.

Fifth Session

PROBLEMS and headaches of low temperature work were discussed by Ed L. Nelson, chief engineer, Union Ice Co., Los Angeles. One problem he emphasized as bringing rather baffling questions is the heaving or raising of floors under space maintained below 32 F. In some cases the plants with freezer rooms constructed on the ground showed no operating difficulties for many years. Then, for no outward reason, the floors would begin to raise and numerous difficulties would result. Several different expedients were tried to bring the structures back to original position. Early efforts were evolved to release water below grade at one side of the structure and pump it out of shallow wells on the other side. The results were not particularly satisfactory.

In other cases, brine was released in the ground near points of frost heaving. This remedy was satisfactory under certain conditions but could not be considered a permanent solution. For the most part the good results were obtained with double pipes inserted under frost heaved floors so that brine or water could be

circulated to warm up the ground and reduce the troublesome lift. In newly erected structures where low temperature rooms are placed on the ground, it is now common practice to place pipes below the insulation so that heat can be applied when needed. Mr. Nelson analyzed other problems in connection with low temperature insulation such as moisture migration through vapor barriers, freezing of doors leading to low temperature spaces and the design of flapper doors to reduce infiltration of moisture in freezer rooms. All the information was presented in a well illustrated and helpful manner.

Final Session

The final session of the convention was called to order by Chairman Emmett Quinn at 10:45 a.m. on December 1. He called for the report of the Credentials Committee which was presented by the Chairman James Bennett. The committee reported that credentials had been received for 113 chapter votes and 11 votes for members-at-large. By vote of the convention the report was accepted.

The report of the Auditing Committee was presented by Orman New, Chairman. The committee reported that the cash receipts and disbursements for the previous fiscal year had been audited and presented a summary of the income and expense during the period. In their opinion, based upon their examination, the financial statements correctly set forth the cash receipts and disbursements for the period. The report was accepted by vote of the convention.

The report of the Resolutions Committee was read by Chairman H. W. Hedburg. The resolutions began with expressions of appreciation to the officers and members of Los Angeles Chapter for the splendid convention events and the way they had been handled. Special praise was accorded the ladies committee. Tribute was paid to the many speakers who had done so much to provide an excellent engineering program at the convention. The Educational Committee headed by Chairman H. G. Venemann was lauded for the good work accomplished during the year.

President Emmett Quinn and the officers were commended for their devotion to the association and the successful efforts on behalf of the membership. Appreciation was expressed for the material developed in the delegates breakfast and it was recommended that this information be forwarded to the members for beneficial use especially in the smaller chapters.

Special appreciation was given the exhibitors. The value of their exhibits was acknowledged as important in the educational program.

The attendants stood in silent tribute while the final resolution was read:

"With no exceptions this year, like all previous years, we are confronted with the regrettable sad news that the final curtain has run down on many of our co-workers and friends, who in the past have contributed so much to the success of their respective chapters. To some their fame has been spread both far and wide. We honor in memory:

Victor Adams, San Benito, Tex.
J. E. Boddie, Prince Rupert, B. C. Canada
Claude Corn, Minneapolis, Minn.
N. R. Glasgow, Dallas, Texas
Jack Gore, Dallas, Texas
Earle Grass, Edcouch, Texas
A. H. Kannady, Long Beach, Calif.
Howard Long, Culver City, Calif.
W. J. Murrell, Memphis, Tenn.
Lambert Olson, Chicago, Ill.
W. G. Olsen, Los Angeles, Calif.
Stanley Peterson, San Francisco, Calif.
Nels Rosberg, San Francisco, Calif.
William Walker, Lynwood, Calif.
Herbert Wright, Calico Rock, Ark.

The above mentioned have contributed a great deal in a material way and have done much in the past to further our education. To many of us their good deeds will continue to live and make the remaining span of our life richer because of the fact that we had the privilege of knowing many of them intimately.

These resolutions were adopted by vote of the convention.

A further resolution was presented to direct the setting up of a national office to carry on public relations work for the association. There was some question in regard to the cost of such an activity. By vote of the convention the resolution was referred to the Board of Directors with the recommendation that they take prompt action in the matter.

The new officers were then installed by Chairman Quinn who complimented them on their past work for the association and forecast a good year.

President Howard Peterson responded for the new officers. He told of the numerous satisfactions to be gained from active work in the NAPRE and spoke of the cooperation he expected to receive from the officers and members. With this cooperation, he said, everyone could expect a productive future.

Past President Walter Bernd presented a testimonial to retiring President Quinn on behalf of the association. He expressed the affection and regard of the membership for Mr. Quinn and thanked him for the many years of effective work, not only in numerous national offices but locally as well.

Mr. Quinn responded with appreciation to all his friends in the association. He said the N.A.P.R.E. did not owe him anything for his work because in return he had gained a great deal in knowledge and friendship which he valued very highly.

President Peterson announced that arrangements were being made for the presentation of a new course on refrigeration. Sections of this course will be sent by direct mail to members on a serial basis and it is expected that a number of chapters will base their programs on it.

Chairman Ray Burnett of the Membership Committee spoke in favor of more specific membership building activity in all sections of the country. He suggested again that competitive spirit be created by contests in each chapter and invited everyone to begin early in a drive to win the national trophy in 1951.

In regard to the 1951 convention an invitation was received from Dallas. In view of the generally unsettled conditions and the bad news from abroad, it was suggested that final decision on the convention be delayed because travel restrictions and other factors might have a bearing on the matter. The chairman pointed out that it was the duty of the Board of Directors to choose the place and dates for the annual conventions and declared that the board would take all factors into account in establishing the time and place of the next meeting.

The convention unanimously gave a vote of thanks to the Los Angeles Convention Committee for its fine accomplishments.

Since no further business was presented the meeting was declared adjourned by President Peterson.

Entertainment

THE people who attended the Los Angeles Convention enjoyed themselves. Many gratified their desire to see their favorite radio shows. The women enjoyed trips to numerous places of interest and amusement. High point of the program was the dinner-dance with some of the most delightful entertainment ever presented at these affairs. Inspired by the professionals, the convention group danced with enthusiasm until closing time.

NAPRE Department

N A P R E

Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating problems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

Suction Frosted Back

Question No. 868: We have been troubled with wet gas coming back to the compressors as described in Question No. 6—Page 61 of the 1950 Operating Data Book. You gave your answer based on the information furnished to you at that time. Apparently I did not tell you that the installation had evaporator pressure regulating valves in the suction lines from our 5 cooler storage rooms. Further study of our system shows that the accumulator may be at fault in returning wet gas to the compressors. The suction connection to the compressor takes off from the top center of the accumulator dome but the riser bringing suction gas from the evaporator header enters the accumulator at one side just below the dome. Thus the gas discharged from the evaporator enters the accumulator only 3 or 4 in. below the suction line to the compressors. It appears to me that this arrangement of the accumulator connections could permit wet gas to be carried straight through the accumulator to the compressors. What do you think of this and what remedy would you suggest? —H.V.S.

ANSWER: Since submitting the above question Mr. Scriven has given me some additional information which has a bearing on the cause of wet gas returning to the compressor especially at the beginning of the cycling.

(1) The suction line from the top of the surge tank is only 1 inch.

(2) Between the surge tank and the compressor is a suction pressure regulator and solenoid stop valve.

(3) One set of coils feeding into the accumulator consists of six rows of ¾ inch pipe, terminating in a header with 1¼ in. return.

With this information to supplement the original data let us see what takes place between shut down and starting of the coil operation.

At shut down the suction solenoid closes and the pressure rises in the coils. When starting the solenoid opens suddenly and the gas escapes suddenly with perhaps 8 or 10 psi pressure drop. Since the 1¼ inch outlet into the accumulator has a cross-sectional area less than one half that of the 6-three-quarter inch coils the gas velocity is more than twice that within the coils. This causes a surging action and carries liquid along with it into the top of the accumulator and in a direct line with the gas outlet from the accumulator to the compressor. Naturally the liquid has no chance to settle out and will be carried over to the machine until operations become normal. Even then the liquor could be carried over if the coil is under heavy load and there is considerable pressure drop through the back pressure valve. —H. G. Venemann.

Scale Removal

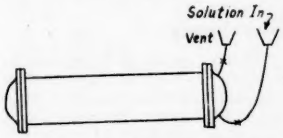
Question No. 869: Your recommendations on a condenser scale problem would be appreciated. There are four horizontal shell-and-tube ammonia condensers 15 ft. long, each with 27 tubes. After one year operation a reduction in efficiency was noted and it was determined that the tubes had scale about 1/16 in. thick on them. To remove the scale we circulated dilute hydrochloric acid through the tubes by means of centrifugal pump for a few hours. Apparently little of the scale was removed. Chipping of the scale seemed too laborious and almost impossible due to the length and the number of tubes involved. What is the best method to use for removing this scale?—P.K.S.

ANSWER: I agree that circulating the acid was probably not the best thing for your English correspondent to do. I am glad to offer the following comments on the problem stated.

Whether mechanical or chemical cleaning is preferable depends on (a) the nature and extent of the fouling deposit, and (b) the type and size of the equipment. I presume that this problem involves an ammonia system with steel tubes larger than ½ in. Off hand, I think that most engineers having shell and tube condensers with only 27 tubes each, where 1/16 in. deposit occurs during a year's service, would buy suitable cutting tools and clean the tubes mechanically.

Where the composition of the deposit can be determined, chemical solvents can usually be applied effectively. The most desirable way, if the job is big enough to warrant it, is to engage the services of a concern like Dowell, Inc., which makes it a business to handle problems of this kind. They examine the deposit, mix proper strength acid, with inhibitor and wetting agent added, and clean up the equipment with their own pumps, tanks and hose connections.

This particular job would probably not justify the services of such an outside expert. The next best procedure would be to use an inhibited acid or other cleaning solution like one of the commercial formulations which can be adapted to the problem.



Putting myself in the questioner's shoes, and assuming that neither professional cleaning services nor a scientifically prepared cleaning solution is available, I would scrape out a little sample of the deposit and drop it into some hydrochloric acid. If nothing seems to happen, then I would make up my mind to get some tube cleaners and do the job mechanically. However, if the sample causes the acid to effervesce, the deposit is at least partly made up of carbonates and can probably be disintegrated by acid, in which case I would take the following procedure.

(1) Figure how much solution is required to fill up the system.

(2) Buy enough 18°Be. muriatic acid (28 per cent commercial hydrochloric acid) to make 10 per cent solution for filling the system. Every 100 lb. of the commercial acid will take about 180 lb. of water to make up 30 U. S. gallons (25 Imperial gallons) of 10 per cent solution.

(3) Also buy some sodium dichromate and dissolve it in the acid solution at the rate of 2 lb for every 30 gallons (U. S.) of 10 per cent solution. The purpose of this is to reduce the action of the acid on the condenser metal without diminishing its effect on the scale.

(4) Fill up the system with the dilute acid, by gravity if a filling location is available at a suitable level (see sketch), otherwise with a pump. Put a funnel or small open surge tank on the vent line and add fresh solution from time to time at the supply connection to keep the system full. The amount added after the system is first filled up will be a rough indication of the total volume of scale dissolved.

(5) Let the solution stand in the system for a day or two. The time required can be judged pretty well by observing the effect of the treatment on the first unit cleaned. It is generally preferable to let the solution stand rather than to circulate.

(6) Keep fire away from the vent line. The gas coming from the scale will be carbon dioxide which is not flammable. However, even with inhibited acid there may be a small amount of hydrogen evolved from action on the metal, and a slight explosive puff could cause a painful burn.

(7) Drain the spent acid, rinse with water, then with weak alkali (5 per cent soda ash), drain again, and the equipment is ready for service unless I want to open it up for inspection.—K. M. Holaday.

Temperature Rise Through Condenser

Question No. 870: In our dairy plant we have 4 stands of double pipe condensers which have 1¼ in. water pipes with a total length of 560 feet. The water going through in the summer takes a 16 degree F rise. This rise would be all right for well water at 55 to 65 F but we use a cooling tower which cools only to 80-85 F in the peak season. Our condensing pressure therefore runs quite high.

Our cooling tower is shot. When we replace it should we put in a larger tower to handle more water? How much temperature rise should the water have in passing through this condenser for best overall results.—A.L.T.

ANSWER: The following table will give you an idea as to the quantity of water to be used through each stand of your double pipe condensers. It will be noted that the water temperature is also important in producing satisfactory condenser tonnage without running the head pressure too high.

There are four things to take into consideration with water at a certain initial temperature, viz. (1) gallons per min, (2) pumping head, (3) condensing pressure and (4) tons capacity. For example: Let us consider cooling tower water at 85 degrees, with 25 gal. per min. supplied to each stand. Under these conditions the discharge pressure will depend upon the load on the condenser, which in reality signifies the tons capacity of the plant. If each stand must condense sufficient ammonia for 5.2 tons of capacity the head pressure will run around 185 psig. If the load is 8.5 tons, the head pressure will go up to 205 psig., and at a 10 ton load the pressure will rise to 215 psig.

If I were building a new tower and expecting 85 degree water, I would figure on circulating from 100 to 120 gallons per minute or from 24 to 30 g.p.m. per stand. The temperature rise would range from 6 to 10 degrees.

The above table was used a number of years ago when double-pipe condensers were popular. I believe that it is reasonably reliable.—H. G. Venemann.

TONS CAPACITY PER STAND OF D.P. CONDENSER, 1¼ IN. AND 2 IN., 8 PIPES HIGH, 20 FT. LONG

Initial water temp.		80 F			85 F			90 F		
Condensing pres. psig.		185	205	225	185	205	215	205	215	235
Condensing temp. °F		96.3	102.3	108.0	96	102.3	105.2	102.3	105.2	110.7
GPM	Velocity Ft./min	Ft. Head	Tons Capacity per Stand							
15	192	11	5.2	7.1	9.1	3.8	5.8	6.5	3.9	4.2	6.5
25	320	30	7.8	11.0	14.0	5.2	8.5	10.0	5.8	7.1	9.1
35	448	58	9.8	13.0	16.0	6.5	10.0	15.0	7.0	8.5	12.0

New Questions

Relief Valve Size

Question No. 871: What size safety relief valve is required for an ammonia receiver 2 ft diameter by 10 ft long?—P.M.K.

Discharge Line Size

Question No. 872: The discharge from this relief valve will be piped to the outside of the plant and will be 80 ft. long. What is the minimum size pipe we can use for this discharge line?—P.M.K.

Heat Exchangers

Question No. 873: How widely are suction heat exchangers used on Freon 12 systems in larger industrial applications such as 40 tons capacity and up? Is there any particular benefit in a heat exchanger on a larger system?—A.A.R.

News Notes and Activities of Chapters

Rio Gande Valley

BY ARMIN DONEIS

MANY interesting questions on operating methods and procedure have been discussed in recent meetings. A specimen of heavy scale was passed around for the group's examination and comments. It turned out to be from the tubes of a water heater whose circulation had been stopped by closing of a valve, thus allowing the water to evaporate and choke up the tubes with solid scale. This sample emphasized the need for a continual ample flow of water through heaters to avoid choking them with scale.

One member reported a large discrepancy between the clearances of two cylinders, one of which had just been rebored. The rebored cylinder had almost twice the end clearance that the other one had. The possibility was suggested that perhaps in bolting the cylinder back on top of the crankcase a heavier than usual gasket had been used, thus accounting for this great difference.

Another question concerned the reconditioning of brine which has been contaminated with ammonia through a bad leak in the system. It was explained that neutralizing the ammonia by use of acid is more economical than discarding contaminated brine and replacing it with fresh brine. It was pointed out that aeration of the brine first reduces the amount of ammonia that will need to be neutralized by acid, and that such aeration will help bring the pH back within a safe range and help avoid undue corrosion.

In the refrigeration course Instructor John Muller led the group in consideration of the purpose and proper use of Log Sheets and he emphasized the importance of carefully filling in the information and properly analyzing this information to discover unusual conditions or symptoms of distress which may lead to early remedy and avoidance of major breakdown.

In the question period at the next meeting there was a discussion on bearing troubles recently encountered by one of the chapter members. It was reported that Bardahl, a proprietary friction reducing additive had been mixed with the oil in the troublesome bearing with good effect. In the general discussion on bearings which followed one member described how he had successfully used a special preparation known as Time-Saver which was a fine grinding compound which could be used for quick fitting of bearings without danger of having any embedded in the babbitt. The secret of this preparation apparently lay in the fact that the cutting agent quickly lost all of its cutting edges and could be safely flushed out of the bearing with the regular lubricating oil without first having to painstakingly clean out all traces by hand.

Another member brought up the problem of how properly to measure clearances in enclosed vertical ammonia compressors, and methods of obtaining reliable measurements by means of strips or ribbon of wire solder were discussed. It was em-

phasized that the safety head should be bolted down securely with a heavy crossbar instead of being held down by its usual hold-down spring, as the latter might be likely to give a false reading due to compression of the spring at top center.

A question arising from speculation was asked, whether a long liquor line full of liquid ammonia, closed at both ends by tightly shut valves would not burst somewhere in case of a considerable rise in temperature. The answer seemed without a doubt to be "yes."

Mr. Casberg gave a moving report of the Los Angeles NAPRE convention and spread a contagion of enethusiasm among the stay-at-homes by his interesting and detailed description of the goings-on. He gave brief summaries of numerous highly interesting papers read at the meetings and whetted our appetites for the time when these papers will appear in NAPRE publications. His description of several plant inspection trips were followed with keen interest and his report on the Delegates Breakfast where local chapter problems, gripes and promotional methods were discussed put our members into a mood for heartsearching.

During Mr. Casberg's report many questions were asked for more details or further explanation, and the report was well received and of much interest and benefit to all present. We were all happy to learn that NAPRE is definitely on the upgrade, and that there has been a marked gain in membership over former years. President J. L. Haley thanked Mr. Casberg for his report and expressed the chapter's feeling that we were fortunate to have had him for our delegate.

Chicago

By E. B. Jones

FOR the first meeting of the month the members of Chicago Chapter gathered at the plant of Mars, Inc. This giant operation which manufactures candy for national and international sale covers two city blocks. During recent years the plant has been modernized to speed output and cut costs. At the time of the inspection it was operating on a 24 hour schedule and turning out millions of candy bars per day. The key to the production at high volume is the use of refrigeration to speed up the process. Operations which used to take a number of hours are now accomplished in less than 30 minutes. Controlled temperature has made it possible to use high volume wrapping machines. Cooling of the finished candy is accomplished in a blast tunnel at -5 F. The temperature is maintained by circulating -12 F brine.

The brine is cooled in a 500 ton centrifugal compressor. Air conditioning in the plant requires another 1,000 tons of refrigeration. All the refrigeration is produced by Carrier centrifugal machines. The engineers were also interested in the large 800 hp 220 volt Ideal synchronous motor which drives the largest machine. At full voltage start this motor draws 6,700 amperes through the bus duct connections. Chief Engineer Parks explained the arrangement and operation of the equipment to the visitors. Following the inspection trip he led them to the dining room where coffee was served.

The section of the regular refrigeration course was presented by Douglas Benton. He traced the development of condensers up to the production of the shell and tube type. Then he gave details of the application and operation of these condensers.

At the next meeting Ed Gaarnas presented the section of the refrigeration course concerned with cooling towers and evaporative condensers. He discussed the cooling range and water quantities associated with various types of towers. Then he described the Hubbs Condenser which utilizes the principle of evaporating the water on the surface of the condenser pipe but does not employ blowers. It was explained that the water jets induced downward circulation of air and that the expansion of the water in turning to vapor pushed the warm air and vapor out of the condenser.

A panel was set up for discussion of water cooling and condensing operations. It consisted of Russ Jones, Niagara Blower Co., Joe Lewan of Buildice, Gene Rytlewski and Emerson Brandt with President Leslie Clifford acting as leader. A number of questions were submitted by members of the chapter. One particular question that came in for considerable discussion was the fouling of evaporative condenser surface with scale. Mr. Jones emphasized the regular draining off of water from the evaporative condenser circulating system. He suggested that the best method was to bleed water off the pump discharge. A section from a badly scaled condenser tube was exhibited. Mr. Rytlewski emphasized the need for maintaining at least the minimum velocity of 150 ft. per minute through the tubes in order to reduce scale and sludge formation.

The chapter enjoyed a sound motion picture entitled "Deep Horizons". This movie showed the production of crude petroleum from the geological survey through to the well drilling and final production. It was furnished through the courtesy of the Texas Co.

Stockton-Modesto

By R. M. Edger

Our last meeting was a plant visit to the Dow Chemical Co. ammonia plant at Pittsburg, Calif. We chartered a bus and 35 members and prospective members attended.

The Dow Co. served us dinner then took us through the plant. Mr. Coil who is Superintendent of the Ammonia Division, was in charge and we all gained considerable knowledge about the handling of ammonia from this visit.

Seattle

By C. L. Bertus

SEATTLE Chapter in preparation for its annual election heard nominations and a committee was appointed for the usual audit of the chapter accounts. Robert Rittenburg gave a brief report on the new city refrigeration ordinance which is now in its final stages. Bob Becker, a new member of the chapter was welcomed into the group by Texas Cornish.

A special talk on welding methods and equipment was presented by President Pamment. He pointed out that earliest welding was accomplished with a coal forge and anvil. The development of calcium carbide was traced and it was finally shown how acetylene - gas was produced from it. Oxygen was known for a number of years before acetylene and an early forerunner of present welding equipment was the coal gas and air torch. When the oxy-acetylene torch was developed it was not only portable, but also was capable of producing a temperature of 6,000 F.

Recently Mr. Pamment said, the method of using eutectic alloys in lower temperature welding has been brought to this country from Switzerland. The eutectic methods permit welding at much lower melting point in the range of 900 to 1,200 F.

Special fluxes are used to indicate the heat level and also to act as a capillary agent for drawing the metal into the joint. Metals suitable for use with this newer method are aluminum, brass, bronze, copper, iron and steel and pot metal. Strong welds result from the use of these new methods. For instance, gear teeth replacement and building up and overlaying operations can be successfully accomplished.

Memphis

By Charles Conley

THE chapter enjoyed a special event in the form of an inspection trip to the plant of the Kimberly-Clark Corporation. This plant receives wood pulp prepared by other company operations and makes it into finished products such as Kleenex Tissues, toilet tissues, Kotex and paper napkins. The processes are complete and the products in boxes and cartons are loaded into cars and trucks for shipment out to sellers and users.

Plant processes require a lot of water and steam, as well as huge machinery and equipment which interested the engineers on their inspection trip. Everything about the plant is kept in first class condition and the personnel is of the highest. There are few plants we have visited which are as well equipped and maintained as this one is.

At the conclusion of the trip through the plant the group was taken to the assembly room where the processes were explained to them. Later refreshments were served. The chapter is indebted to C. G. Eubank, plant manager and John Peterson, plant engineer of the Kimberly-Clark Corp., and John Thrithart of the General Electric Co., for their courtesy and cooperation in arranging this interesting trip.

Refrigerated Warehousing Industry

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

Executive Offices
TOWER BUILDING, WASHINGTON 5, D.C.

Executive Vice-president
WM. DALTON, WASHINGTON, D.C.

Secretary
JOS. H. COLQUITT, WASHINGTON, D.C.

President
J. L. GACINI, OMAHA, NEB.

Vice-president
J. P. JOHNSON, WASHINGTON, D.C.

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WM. A. MOORE, NEW ORLEANS, LA.

THIS MONTH IN BRIEF

The annual survey of refrigerated warehousing industry, from reports by leading warehousemen, shows optimistic outlook for 1951. Occupancy was somewhat better in 1950 than the preceeding year. Frozen foods continue to increase in volume and outlook for future trend is optimistic.

The 1951 outlook for shell egg storage is very favorable, but is not expected to regain the high point of 1930, according to a Department of Agriculture analyst. Seasonal leveling out of production and growing use of frozen eggs are expected to be factors.

Refrigerated warehouse occupancy on November 30 showed a drop in both cooler and freezer space of one point each from the previous months. Holdings of apples and beef were especially favorable.

The volume of cold storage holdings during 1950 held up well, commodities generally showing an increase over the previous year.

Survey Shows Optimistic Outlook for 1951

Leading refrigerated warehousemen report on 1950 business and offer some opinions as to 1951. Next year is expected to be better.

THE year 1950 was fairly successful from the viewpoint of refrigerated warehousemen generally, with occupancy somewhat better the year before, in most instances. This survey is a reflection of information and opinions expressed by leading warehousemen. Next year is expected to be as good but all forecasts are dependent upon factors that cannot now be foreseen. Looming above all is the war situation, but whichever way it develops this is not expected to have an adverse effect upon occupancy.

Regarding leading commodities, not much change is reported from last year, except that the trend of shell eggs for the immediate future cannot be predicted. Frozen foods continue to increase in volume and outlook for the future trend is favorable. New commodities are gradually getting into the picture but with no large volume as yet. Costs were higher than the year before and income, while generally adequate, did not keep pace. Old problems, headlined by labor and handling, seem to remain in the spotlight, with the turn of events in a probable wartime economy still in the speculative stage.

The Outlook for 1951

THE outlook for 1951 is generally favorable, ranging from outright optimism to conservative pessimism. Most warehousemen expect a better year, but this is tempered by realization that there may be unforeseen factors. The looming war situation is not expected to have an adverse effect, from the standpoint of occupancy. The probable increased burden of taxes will cut into net income to an appreciable extent.

Idaho—Following the law of averages, we believe that 1951 will be a better year than 1950. Crops seldom fail twice in succession. Markets should improve under the rearmament program. However, we are so far from the market that our cost of transportation is very high. There will be further mechanization of farm work.

Illinois—In previewing our outlook for 1951, we feel that our profits should be less than 1950 owing, principally, to the increase in taxes imposed upon businesses by the government, as well as increased costs imposed upon warehousemen by virtue of increased wage demands. Business volume will be good because of the government's demands, but this will be off-set by increased operating expenses and taxes.

Louisiana—We look for increased volume of business in 1951; not necessarily much bigger profits nor payrolls, but more goods in storage, and in and out. The war situation will tend to cause this, plus increased storage of frozen foods, speculation, shortages, etc. We already note that the "pinch" storers are coming back; people who normally store little or nothing are now beginning to stockpile a bit. It all adds up to increased storage for 1951. We personally would welcome wage and price controls on a national basis. It would be fairer than the present spiraling. Labor will be short, but we have an old and seasoned staff, and hope to hang on to them.

Massachusetts—The outlook for 1951 will be greatly affected by the world situation. Operating costs will of course be higher, manpower will be short and warehouse operators will present more difficulties than in 1950.

Minnesota—We expect no material changes in our occupancy in 1951. With our government easing out of the buying picture, we may have an incentive to greater holdings by private business in some commodities. A definite stand on controls, rationing, wage fixation, taxes, etc. can be a factor beyond apprehension. Yet we are inclined to ride with those who predict "no hitch in prosperous times with an election in the offing and fears biting at the heels of those now in the snowbanks of despair."

New York—The 1951 occupancy will depend to a large extent upon demands for refrigerated warehousing service in a war economy plus, as always, government subsidy programs.

Tennessee—The outlook for 1951 appears to be definitely favorable from an occupancy standpoint. We base this on the

anticipated increased demand by the Armed Forces and continued large demand for all food stuffs due to full employment, high wages, etc.

Tennessee—I believe that in the immediate future the refrigerated warehouseman will have a tremendous burden upon him, due to the increased tempo of the war situation. The National Association of Refrigerated Warehouses have proposed to the Armed forces, and other government agencies, a plan whereby refrigerated warehousemen will be able to efficiently serve the civilian needs, as well as the military demands that will be made. Of course the Armed forces will continue to have priority over civilian needs, but it must never be forgotten that the needs of the civilians remain important also.

Texas—Larger volume is undoubtedly on the way for the immediate future and on a long range basis, due to more and more commodities which are being found to retain their quality and wholesomeness by storing in refrigerated storage. Of course the international situation will have everything to do with 1951. It appears that our industry will probably be taxed to the limit, should we get into the third world war. Otherwise our business should be good throughout all of 1951.

West Virginia—The war situation is, of course, the large factor for 1951. If we are not too regulated, I feel that the outlook for next year indicates an increase. The demand for freezer space has grown each year. We are just completing an addition to our freezer, which will more than double our present low temperature storage space. We expect to be able to keep this occupied to capacity most of the time so that business in 1951 should show a sizable increase over 1950.

Washington—The prospects for 1951 at this point look good. The volume of government food supplies expected to move through the North Pacific coast ports indicate we may be quite busy in 1951.

Space Occupancy

SPACE occupancy during 1950, generally was up, particularly the last six months and this trend is expected to continue into 1951. Freezer space particularly appears to be in good demand and this trend also is expected to continue.

Idaho—Our percentage of occupancy for for 1950 was about 20 percent more than 1949 and we expect it to increase ten percent more on top of that next year. If there is a war a very large share of our storage space will be taken by the Armed Services.

Illinois—Our occupancies have maintained an unusually high percentage since 1945, excepting 1947. Our 1949 occupancy figure was 85.4 percent, 1950, 93.6 percent (through November). We expect our average occupancy during 1951 to maintain a similar high percentage.

Louisiana—Our percentage of occupancy for 1950 was about 10 percent higher than 1949.

Massachusetts—The percentage of occupancy in our Boston plants was lower during 1950 than in 1949. This was due in large part to the heavy withdrawal of cranberries which were in storage during 1949.

Minnesota—Our occupancy in 1950 compared favorably with that of 1949. This despite the fact that we lost much of our government holdings.

Missouri—The percentage of occupancy for 1950 compared quite favorably with that of 1949 and we are anticipating as much volume, or probably a little more in 1951 than we had in 1950.

New York—The year 1950 was one of extremes—low occupancy the first six months and high occupancy the last six months, with the average 20-25 percent under 1949.

Pennsylvania—We got off to a bad start for 1951 but our occupancy for the year as a whole will be better than it was in 1949, and from present indications, we believe 1951 will be still better.

Tennessee—Occupancy for 1950 was about 10 to 15 percent above 1949, and with the present outlook should continue at about the same volume for 1951.

Tennessee—Our occupancy for 1950 was about 5 percent ahead of 1949. We expect this to continue for 1951.

Texas—Our occupancy for 1950 increased aproximately 20 percentage points from that of 1949. We expect to hold the 1950 occupancy during 1951.

Texas—Our 1950 occupancy was approximately 20 percent above 1949. This was mostly brought about by the increased business during the last six months. The first five months were about equal to the 1949 comparable period.

West Virginia—Our business in 1950 was about 10 percent better than 1949. A large part of our revenue from cooler space is received from rentals to meat packers, both national and local.

Washington—Our percentage of occupancy in 1950 was about 15 percent under 1949.

Leading Commodities

LEADING commodities listed in this survey include staple goods such as meats and other packing house products, shell eggs, frozen foods, butter and other dairy products and other agricultural commodities. The immediate future of the shell egg situation at this writing is unpredictable, but it is listed as one of the leading commodities in storage and some increase is expected next year. Apple storage mentioned by one, is expected to decline in 1951.

Idaho—We store mostly packaged foods and agricultural products. Our business in 1951 may include supplies for the Army.

Illinois—We store a considerable quantity of frozen foods and this volume was up during 1950. We expect it to increase during 1951.

Illinois—The storage of shell eggs during 1950 tripled over 1949, meat doubled, butter was one half again as much, canned eggs and poultry remained about the same. During 1951 we expect sizeable shell egg holdings, less meat, less butter, more poultry and more frozen fruits and vegetables.

Louisiana—We store general commodities of all types, both cooler and freezer. In general fish and poultry products increased in volume over 1949; so did packing house products of all types. Volume of cheese and domestic hops declined over 1949. We anticipate a continued increase in fish, poultry, and packing house products in 1951. We anticipate cheese and cooler goods will remain about the same. Potatoes, onions, cabbage, etc. stay at about a constant volume over the year. Apple storage will decline in 1951 we believe.

Massachusetts—Poultry and meats stored were much lower in volume in 1950 than in 1949. The apple crop in New England was large and storage of this commodity in 1950 exceeded 1949.

Missouri—We handle a complete line of perishable products but cater mostly to merchandise requiring a temperature of zero or lower.

New York—We normally store large quantities of dairy products. This volume in 1950 was about 60 percent under 1949 due largely to the government support program. What the program will be for 1951 we do not know.

Pennsylvania—While we store practically everything that comes under the heading of perishable foodstuffs, probably better than 80 percent of our business is frozen fruits and vegetables, frozen juices, meats, poultry, sea foods and dairy products.

Tennessee—Commodities stored mostly were meats from local packing houses, strawberries processed in our area, and various frozen foods shipped in for distribution here. Prospects for 1951 appear favorable.

Tennessee—Our occupancy resulted from receipts of general merchandise. We expect our volume to remain about the same for 1951.

Texas—Our leading storage commodities are frozen eggs, frozen fruits and vegetables, poultry, meat and shrimp. Each of these items showed a gain in 1950. During 1951 we are expecting a decrease in frozen eggs and a slight increase in meat.

Texas—We store all frozen food commodities and a considerable variety of cooler commodities. From the present trend, it appears that frozen food commodities will be considerably more in 1951 than in 1950.

Frozen Foods

FROZEN foods continue as a leading commodity in most sections of the country and, for the most part, an increase is expected for 1951. The volume of orange juice concentrate especially, it is thought, will be larger.

Idaho—We handled about as many frozen foods this year as in 1949. We expect an increase in 1951.

Illinois—Frozen fruits and vegetables in storage were reduced sizeably in 1950 as compared to 1949. This was not because the demand for storage of frozen foods was not present, but because of a heavy carry-over of government butter from 1949 and 1950 production. We expect 1951 frozen foods inventories to be the equivalent of our holdings in 1949. The increase of orange juice concentrate storage demand will become apparent at that time.

Louisiana—We did not receive an appreciable volume of frozen foods over 1949, except for a seasonal strawberry month in May. We expect this volume to remain about the same for 1951.

Massachusetts—In our Watertown Division warehouse, the storage of frozen foods was somewhat larger than in 1949.

Minnesota—Frozen foods volume is increasing and will continue to increase.

Tennessee—Volume of frozen foods for storage appears to be in the increase and this volume should hold up during 1951.

Tennessee—We did receive an appreciable volume of frozen foods for storage in 1950. This volume was considerably over that of 1949.

Texas—Our volume of frozen foods increased slightly during 1950. We expect no great change in 1951.

Washington—Refrigerated warehousing here in the Northwest, is affected very largely by crop conditions and the market demand for frozen foods grown and processed in this section. Several fruit crops such as Evergreen blackberries, peaches and strawberries damaged by freezing during the winter reduced the tonnage generally handled through cold storage. Consumer demand was good enough to cause early shipment on a fairly large portion of tonnage.

New Storage Commodities

CANDY, green coffee, and adhesives are mentioned as possible new storage commodities. Warehousemen seem to deflect this problem to research agencies, with the idea that they will show interest in a new commodity when sufficient volume is indicated to make it commercially feasible.

Idaho—On account of high freight rates more and more freight is being carried by truck lines. Refrigerating warehouse services may develop lines of their own to increase their business.

Illinois—No new freezer commodities are anticipated to be stored since the demand will be filled with commodities we now handle. However, in handling them a more general use of mechanized equipment is expected.

Louisiana—We believe that refrigerated storage of candy and candy ingredients is a coming thing; also storage of green coffee offers prospects for this area. Very little coffee is now stored, but research indicates it has many benefits.

Missouri—We have no knowledge of any new commodities or new services which might be included in the operation of our business. This comes about from time to time through various experiments.

Tennessee—We do not have any new storage commodities in our area and we do not anticipate any new services that are not in effect now.

Tennessee—The only new commodity we have stored recently is candy.

Texas—We have air-conditioned a considerable amount of storage space and are using this at a temperature of 65 to 70 degrees with relative humidity of approximately 60 percent for candy storage and have developed a considerable volume. This is increasing all the time. We have stored a small amount of adhesives in cooler storage. We have also stored experimentally, one carload of green coffee. We don't as yet know the outcome of the experiment.

Costs and Income

COSTS of doing business were higher than the year before and, in many instances, they were more proportionately than income. Increased rates are suggested as a remedy, although this has already been done by some. Mechanized handling also is mentioned as a means or reducing costs.

Idaho—Costs were in line with income as compared to previous years.

Illinois—Our costs were in line with income in comparison to previous years.

Illinois—Overall costs for 1950 are above those in 1949 by 7 percent, despite a conscientious effort to reduce the number of hours worked and increase the output per man hour.

Louisiana—Costs ran higher than usual for 1950, and we figure them out of line with income over previous years. Labor costs we held; everything else went up and is still going up. We have not increased prices since 1947 and do not intend to in the near future.

Minnesota — Our operative costs increased again as they have done each year in the past ten. Looking ahead, we increased our tariff charges, and in so doing are in position to meet the expected increases in 1951. It may rain some day but in the meantime we have our umbrella up.

Missouri—Unfortunately our income has not kept up with the increased cost of operation and there must be some drastic changes made in the economic structure if we hope to continue operating on a profitable basis.

New York—Rates have had to increase to meet constantly rising costs. We can see no prospect of any material decrease in these costs during the coming year.

Pennsylvania — Our costs have been steadily mounting and we were forced to issue a new tariff this year. We had previously issued tariffs in 1947 and 1948. By so doing, we have managed to keep our costs in line as compared with income.

Tennessee—Our cost for 1950 appears to be in line as compared to previous years. It is higher, but all expenses are somewhat higher too.

Tennessee—Our cost has increased considerably, but not in direct proportion to our income.

Texas—Our costs went up during 1950 but compared favorably with income.

Washington—Cost of operations against gross revenue 1950 as compared with 1949 in city plants were up 4 percent and in our rural plants (one crop houses) were up 18 percent due largely to the smaller volume handled.

West Virginia—Our costs, of course, are steadily rising and the only solution I see to the problem is to raise rates to take care of it. This we have done in some cases, but I feel that a general across-the-board increase should be given a lot of thought. We have some accounts that could not stand a very large raise. Mechanization of our handling should help.

Outstanding Problems

NEW problems do not appear to be uppermost in the minds of warehousemen, but rather a continuation of their old troubles such as labor, unfavorable weather, declining markets, demand for short freezer space, handling. The use of materials handling machinery it is expected will increase. On an institutional level, it is suggested that the importance of the industry to the general welfare of the consuming public needs to be more sharply realized. Progress to this end, incidentally, is being made by the public relations work of N.A.R.W.

Idaho—The outstanding problems here were weather, crops and markets. The weather in 1950 was very unfavorable for the farm crops. There were heavy frosts and unfavorable growing conditions. Markets for some of our products were so low that those products could not be shipped. Vegetable growers and fruit men both suffered from these conditions.

Illinois—Our most outstanding problem during 1950 was the excessive demand for freezer storage space since such a large percentage of holdings were held by the government in their storage butter support program—and still is—thus requiring us to handle our normal customers with considerably less available space. Secondly the transition from hand stacking to powerized operations created considerable difficulty owing to the large amount of space lost in using pallets as opposed to a man-stacking operation. Labor is becoming increasingly more difficult to obtain and unions still persist in demands for increased wages consequently the use of materials handling machinery—even at the sacrifice of space loss—will be expanded.

Louisiana — Most outstanding problem was keeping costs down and income up and getting new business. We have improved our mechanical handling and intensified our selling on the street and personal contacts with old and new customers.

Refrigerated Warehousing

Minnesota—Labor troubles were our most serious problem in 1950. We honestly don't know what can be done to offset this phase of our operations. In our opinion, our industry is across a barrel as regards putting up a fight against union demands. We must have recognition of our importance to the general welfare of the consuming public. Whether this is a National matter or one for localized regulation is debatable. It is a subject worthy of discussion at our annual convention.

New York—The outstanding problems of the industry for the coming year will continue to be operating a business in a war economy, taxes, and legislation. These problems can be met only by an intelligent, forward-looking planning. This the refrigerated warehousing can and will do.

Tennessee—Our problems for 1950 were no different than in previous years, although our handling problem is getting to be more acute due to increased labor cost. We are having a survey made for materials handling shortly.

Texas—Our outstanding problem during 1950 was labor. Our engineers were on strike six weeks. Replacements were hired but we are still behind in our maintenance work.

Texas—Mounting labor costs seems to be the outstanding problem with us during 1950. We have met this to some degree by more mechanical handling equipment with greater efficiency in the operation of same.

Building Better Business

BUILDING better business seems to resolve itself primarily into selling the industry to its potential customers and the consuming public, for the long pull. This means largely group action and the logical agency is the N A R W. On this there is complete agreement. The value of individual initiative however should not be overlooked, and suggested activities are making themselves an influence in state legislatures, personally contacting old and new customers, cooperating with other warehousemen, customer education on proper storage conditions.

Idaho—The refrigerated warehousing industry should follow the lead of the National Association of Refrigerated Warehouses. This association will provide plenty of ideas and ways of meeting problems.

Illinois—Increased volumes for storage demand are not a problem today, what with national emergencies confronting government demands on our warehousemen. Increased population and increased consumer acceptance of frozen products have been our best salesmen.

Louisiana—Both individually and as a group warehousemen should make themselves heard in state capitols and in Washington on essential legislation affecting them. They should go in for more "good housekeeping" in their warehouses; more careful handling and storing of their customers' merchandise. They should work on their personal contacts with new and old customers.

Minnesota—Individuals cannot do much in these times. Group action is necessary. In this our Refrigeration Research Foundation is exemplary. We are the recipient of new items for storage and we are being guided by project experiences related to

problems concerned with doing a job for all items or commodities requiring refrigerated warehousing. It is likewise so with our National Association. Trade bodies are an important factor in business these days. We must as individuals be alert. We must act collectively. In unity there is strength. Our association must guide our industry. To this end it is also indispensable to the future welfare of each and every one in the business.

Pennsylvania—We strongly urge that refrigerated warehousemen keep costs on every operation and endeavor to make every service remunerative.

Tennessee—We have no new ideas on what should be done to create better business, bigger volume, etc. except to continue carrying on our business on a high plane and in an ethical manner.

Texas — Refrigerated warehousemen should cooperate with each other to a greater extent, with a greater exchange of ideas and experience. This would aid in eliminating petty bickering. Customer education of proper storage conditions should be advanced. Warehousemen should circularize technical reports from associations and magazines to interested customers. Too many customers do not understand proper storage techniques and are depending on hearsay or out-dated principles.

Texas—Possibly more national advertising of what a cold storage warehouse is would benefit the industry as we find that except for the small group of people directly affected, the general public is comparatively unaware of the functions of a cold storage warehouse.

Washington—To create better business, my answer is, "build a better mouse trap," in other words improve our service to our customer, try and watch his cost of doing business with us as well as our own and make ourselves needed as a part of his operation.

Regulations Extended for Dressed Poultry

THE U. S. Department of Agriculture has proposed an extension of time under which poultry processors may change plant facilities to comply with requirements under USDA's new voluntary dressed poultry (New York dressed) grading and inspection program. Under previous programs, no sanitary requirements have applied to "New York dressed" poultry.

The proposal would extend the final date for compliance with the new regulations from January 1 to May 1, 1951, and until the latter date dressed poultry would remain exempt from the provisions of the regulations concerning its preparation in official plants. Poultry prepared in ready-to-cook form under the Federal poultry inspection program has always been subject to sanitary requirements during eviscerating and packaging.

This action was taken as a result of numerous industry requests brought on by shortages of materials and equipment needed to make changes in plant facilities in order to comply as "approved plants".

Frozen Fruits and Vegetables in Storage

INFORMATION as to package size distribution for October 31 was based on reports received from 286 warehouses storing almost three-fourths of the three frozen fruit items and three-fifths of the six selected frozen vegetable items. The coverage for this report has remained fairly constant since its inception in 1947. In the case of frozen fruits, the greatest detail as to package size distribution of the stocks in store amounted to 79 percent which was reported in June 1948 and August 1949. Frozen vegetables classified as to package size have always been far below the level of the frozen fruit data. The maximum ever classified as to container size was 68 percent of the total in store for July 1950.

COLD STORAGE STOCKS OF FROZEN FRUITS AND VEGETABLES IN PACKAGES OF ONE POUND OR LESS IN STORAGE OCTOBER 31, AND SEPTEMBER 30, 1950
(000 lbs.)

	October 31, 1950		September 30, 1950	
	Lbs.	Pct.	Lbs.	Pct.
Peaches	3,654	26	3,633	27
Raspberries	6,394	26	6,930	27
Strawberries	34,953	42	35,820	42
Asparagus	5,403	75	5,980	75
Beans, lima	27,701	59	24,250	59
Beans, snap	23,976	69	25,808	68
Corn, sweet	15,184	50	15,105	48
Peas, green	54,415	63	58,322	59
Spinach	9,942	78	10,888	84

The distribution by package size for the three frozen fruit items remained relatively the same as last month. A little more than a fourth of the peaches and raspberries classified as to package size were in retail units. Frozen strawberries in this type package for which data were available on October 31 comprised a little more than two-fifths of the total. Commodity-wise, there were some significant variations in the distribution of retail to larger-sized containers when compared with package-size information of a year ago. On October 31, 1949, the package-size distribution for peaches amounting to 13 million pounds showed that 46 percent were in one-pound packages or less as compared with 26 percent this year. Percentage-wise, there were more frozen raspberries in retail units than a year ago this date, whereas frozen strawberries showed little change in package-size distribution despite an increase of 51 million pounds in total stocks over a year ago.

As in the case of frozen fruits, there was no material change in the over-all distribution of frozen vegetables in retail and institutional-sized packages. On September 30, 61 percent of the total were reported to be packaged for retail sale. By October 31 the percentage increased to 63 percent. Retail units of frozen peas and spinach showed the greatest percentage change of the six frozen vegetable items surveyed as to package size. The former increased from 59 to 63 percent; the latter decreased from 84 to 78 percent. The distribution this month for each vegetable item was fairly comparable to the package-size distribution reported a year ago, with the possible exception of sweet corn. Stocks of this item in 1949 were so distributed that two-fifths of the total were packaged for retail use and three-fifths for institutional use. Current figures indicate a 50-50 breakdown between the smaller and larger-sized packages. The percentage of total stocks of frozen peas and snap beans in one-pound packages on October 31 was slightly higher than a year ago. Spinach and lima beans were approximately 2 percentage points below its corresponding level of a year ago, but asparagus was unchanged.

1950 Pack Frozen Cut Corn

THE pack of frozen cut corn this year reached a total of 33,949,311 pounds, according to a preliminary tabulation prepared by the Association. The 1950 pack was about 9 percent smaller than last year's total, but was larger than in any other preceding year except 1946. The pack in retail sizes registered a slight increase over 1949, while small institutional and bulk sizes were mostly reduced from last year's levels. The regional picture showed the East and South with an appreciably greater pack than in 1949, while in both the Midwest and West, production was smaller than last year.

Canadian Holdings of Fruits and Vegetables

THE Dominion Bureau of Statistics, Ottawa, Canada, reports that the total stocks of frozen fruit for November 1, 1950 amounted to 18,302,000 lbs. as compared with 17,160,000 lbs. November 1, 1949 and 18,162,000 lbs. October 1, 1950. Frozen vegetables amounted to 13,477,000 lbs. November 1, 1950 as compared with 9,194,000 lbs. November 1, 1949 and 12,592,000 lbs. October 1, 1950.

OUTLOOK FOR SHELL EGG STORAGE

Analyst expects that 1951 volume of shell eggs in storage will be larger than previous year, but will not likely regain the high storage point of 1935.

EDWARD KARPOFF
Bureau of Agricultural Economics, U. S. Dept. of Agriculture

SHELL eggs used to be the biggest volume item occupying cooler space in the summertime. Through the 1930's, the egg business was good for a season peak averaging over 8 million cases each season. Except in 1946, the postwar volume has never come close to the prewar levels.

But now, for 1951, the shell egg storage business seems to be on the mend. Some of the experts in the egg business say they won't be surprised if 5½ million cases of eggs are stored by July 1, 1951. This would be a 50 percent increase over 1950, and a 140 percent increase over 1949.

Even if only part of this increase materializes, it will be a good piece of business for cooler operators. But, as every operator knows, eggs are exacting in their storage requirements, so rooms have to be readied some time in advance of the day on which the eggs will come in. Since a study of the economic factors influencing egg storage shows that the eggs should be offered for storage this year in increased volume, warehouse managers have a basis for appraising the suitability of their locations and then planning the distribution of their cooler space among the various commodities that will be offered for storage through the spring and summer.

The expectation of a difference in price serves as the economic incentive for storage. And in the egg business, there is already a lot of evidence that there may be a very substantial increase from the usual low egg prices of the spring months, to the normally high prices that come in the fall.

End of Price Support Favors Storage

Foremost among the factors indicating a wide seasonal price swing for eggs in 1951 is the absence of a Federal egg price support program. In November 1950, the Department of Agriculture announced that, for the first time since 1941, it intended to discontinue the purchase of dried eggs.

(The Government announcement said that egg prices would not be supported in 1951. This means an end to dried egg purchases for price support, but leaves open the possibility for relatively small-scale purchase of shell eggs for distribution through the school-lunch program and other outlets. Such purchases, if made at all, will be limited to the capacity of available outlets.)

In recent years, purchases of dried eggs had been the mechanism through which prices were supported. The Department of Agriculture made its largest purchases of dried eggs in the spring months of heaviest egg production and lowest prices. In the fall months of smaller egg supply and higher prices, the Government purchases for price support have been so small as to hardly affect the market.

As examples, in both April and May 1950, the Department of Agriculture bought about 17 million pounds of dried egg. In each of the two months this was equivalent to 10 percent of the eggs produced on farms, and accordingly without the purchases egg prices would have been lower than the 30-31 cents per dozen which was the average price received by farmers last spring.

Buying Curtailed

But in the fall, it was a different story. In October, November, and December 1950, the Department of Agriculture bought a total of only about 1 million pounds of dried eggs. This was less than ½ of 1 percent of farm egg output in the period. Consequently it had only an insignificant effect on prices, which were already seasonally high—43 cents per dozen to farmers in October, almost 46 cents in November, and probably higher in December.

In 1951, there won't be any buying of dried eggs for price support. So far as the high fall prices are concerned, the direct effect of dropping the program will be negligible. But the support will be taken out from under the springtime price. The net result, other conditions remaining the same, should remove a condition which limited the spring-to-fall differential in past years. This widening of the differential should encourage storage.

The final disposition of the stored stocks, if they are especially large, might temper the fall prices, but the 1950 experience indicates that the markets could absorb a lot of stored eggs without onerous price concessions.

Big Market Open For Eggs in Fall

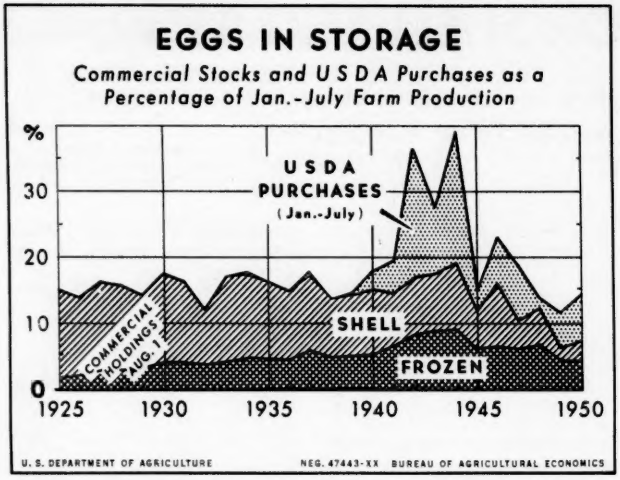
This was demonstrated by the great appetite for eggs which was displayed by the American public in the fall of 1950. In September and October, the per-person consumption of eggs in the United States was the highest on record for the fall season, and about 6 or 7 percent higher than a year earlier.

In November the same record high consumption would have been continued, except that supplies were not sufficient to permit it. November opened with only half a million cases of eggs remaining in storage in the United States, and these were probably used up early in the month. Current production on farms fell below the month before, and as a result of the low supply to meet the continued heavy demand, egg prices rose to the dizzy heights that led to the mid-December collapse.

Even after the mid-December price break, storage eggs, if available, could have been sold at a price profitable to the man who had stored them in the spring. To mid-December, the December egg futures contract on the Chicago Mercantile Exchange remained almost 15 cents per dozen higher than the level at which contracts had sold during the into-storage season.

If substantial quantities of stored eggs had been available to deliver against that contract, they would have tempered the unhealthy price rise and the consequent tumble that occurred in the spot market. In that event the eggs would naturally have returned their owners a somewhat smaller profit per dozen, but storers will agree that a more moderate rise than occurred this year will still be attractive. And meanwhile we have had positive evidence that even under 1950 circumstances the markets could have absorbed many more than the 3.7 million cases of eggs that were stored.

NOTE: This is a personal analysis by the author and is not an official statement of the Department of Agriculture.



The decline in private shell egg storage in recent years was due in large measure to the generally narrowing spread expected between spring egg prices and peak fall egg prices. This spread is affected by the increased production of eggs in the fall, and also, since 1941, by the large springtime purchases of dried eggs by the Department of Agriculture. These purchases are to be discontinued in 1951. Therefore, the springtime surplus will move to storage to a greater extent in 1951 than it did in the last few years, when Government purchases of dried eggs helped to absorb the surplus. The chart above also indicates the increasing importance of frozen eggs as a proportion of total egg storage.

There is already evidence that the practical operators in the field recognize the profit opportunities expected in storing 1951 eggs. Futures contracts calling for September and October delivery (1951) are already being traded in Chicago, and in mid-December they were quoted at between 38 and 40 cents per dozen. In 1950 the corresponding contracts ended trading at 33.9 and 34.5 cents, respectively. So the egg trade, if it so desires, already has the opportunity to sell September and October eggs via the futures board at a price several cents per dozen above the closing prices of the corresponding 1950 contracts.

Storage as a Hedge Against Inflation

The element of general inflation and rising prices throughout the economy is an additional factor encouraging the storage of eggs in 1951. In a period of inflation, most goods appreciate in value; tangible commodities become worth more dollars tomorrow than they are worth today. Eggs are not a unique commodity in regard to this characteristic, but few commodities have the additional advantages of a seasonal price rise, already discussed, and a relative immunity from price ceilings.

The wide spread between current egg prices, and the level at which ceilings might be imposed under present legislation, follows from the relatively low current price of the commodity when expressed as a percentage of parity. The parity price is a legally defined level computed by a complicated formula which changes from month to month.

Importance of Price

The importance of the price of eggs as a percentage of parity, in relation to the likelihood of price ceilings, is this: currently, no price ceiling may be set upon eggs at a price equivalent to less than one hundred percent of parity.

Egg prices were 74 percent of parity according to the latest official computation available when this article went to press. Prices of eggs since the date of the computation have probably reached a higher percentage of parity, but this higher percentage is not likely to continue under the impact of the seasonal changes in egg prices that inevitably occur as the spring season approaches.

Egg Price Ceilings Remote

The principle of parity as a basis for ceilings was a part of the legislation under which OPA operated through World War II, and it is a part of the Defense Production Act of 1950, which provides the present authority for price control. The Defense Production Act of 1950 expires on June 30, 1951, and the policies that will follow it cannot be predicted. Nevertheless, the fact remains that, by the parity criterion, eggs are in a more sheltered position against possible ceilings than are most other animal products that go into refrigerated warehouse space.

As examples, when eggs were 74 percent of parity, hogs were 90 percent, beef cattle were 140 percent, and lambs 136 percent. Milk was at 87 percent of parity and butterfat at 82 percent.

The prospects for shell egg storage in 1951, on the basis discussed here, look good. This naturally leads warehousemen to ask several questions. Among them are: Where, geographically, will the increased storage take place? Are there any obstructions to it, in the form of limitations on financing? And does the expected increase give storage managers any evidence regarding a possible new trend toward increased shell egg storage?

Where Will Eggs Be Stored?

The locations which the egg trade prefers for shell egg storage are in or near the large consuming centers—70 percent of the stocks are usually held in 35 principal cities. Breaking it down even finer, of the 3.7 million cases of shell eggs in storage on July 1, 1950, Chicago warehouses alone held 1.3 million cases. This meant that 34 percent of the eggs held at that time were in that city.

Storages in New York City contained 12 percent of the stocks, and Boston and Philadelphia 4 percent more. This left about 20 percent of the business for 31 other cities, and 30 percent for the rest of the country.

Two factors that were apparent last year may shift the geographical arrangement of the 1951 storage. Shell egg holdings last year were hedged to an unusually large extent, according to trade reports. The hedge typically being on the Chicago Mercantile Exchange, there was a strong inducement to have the eggs in a deliverable position, hence the concentration in Chicago.

But unless 1951 eggs are hedged to a very great extent, the concentration in Chicago need not be repeated. And in a big storage year there might

not be space available in Chicago for holdings there to increase to the same extent as in the rest of the country. In mid-1950, Chicago coolers reported a higher percentage of occupancy than the country as a whole, reflecting partly the concentration of eggs.

Therefore, in 1951 the egg business might be spread over the country to a larger extent than last year. The big eastern consuming centers are likely to be favored in this regard, because the egg trade prefers to have its merchandise located in or near the ultimate market, ready to quickly take advantage of market price fluctuations. Also, some egg men feel that eggs ship better in the spring than they do after a period of storage. For this reason, and possibly in fear of transportation shortages later in the year, it is logical to choose storage locations not too far removed from the cities in which the consuming population lives.

Hedging Through Future Sales

If finances limit the prospective customer who otherwise would rent egg storage space in a cooler, the manager of the refrigerated warehouse can often be of service to the storer. Banks consider eggs good collateral if they are hedged by an offsetting sale of a futures contract. This is particularly true if the eggs are stored in a position from which it is practicable to make delivery on Chicago contracts.

For that reason warehousemen have found it worthwhile to talk the situation over beforehand with their bankers and also with the local brokerage offices maintaining contacts in the Commodity exchanges. If you prepare yourself in advance with the facts and limitations regarding loans and hedging, your advice may be instrumental in gaining business and good will.

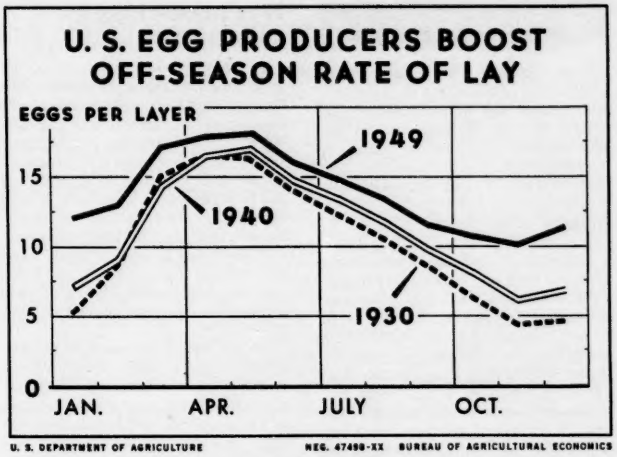
There is one frequently overlooked point about hedging stored eggs through offsetting futures contract sales. The eggs thus hedged are, in effect, already sold. That being the case, title to those eggs no longer represents a hedge against inflation. If the value of eggs were to rise, the egg storer would not benefit, because the cost of buying back his futures contract would also rise by an offsetting amount. In a word, the owner of stored eggs cannot have his cake and eat it too.

What is the Long-Time Trend?

Although the egg storage outlook for 1951 is good, it does not suggest that the storage volume of the 1930's will be regained. The long-time trend in shell egg storage is downward—the old-timers remember that the all-time record of holdings (excluding Government-owned eggs) came in 1930, which was 20 years ago. In that year 11 million cases were stored.

Since then, except during the war, the volume of eggs stored has declined. The decline was quite gradual through the 1930's, to an average level of about 8 million cases.

Defense activities during the war obscured the storage trends that would have occurred in the early 1940's, but in 1947, the second postwar year, there was a tremendous decline, to only 4.2 million cases. In 1949 the holdings were only 2.3 million cases. Storage in 1950 was somewhat larger, reaching 3.7 million cases. By rising in 1951 from these low levels, will the industry be on the way to recapturing the business of the 1920's and 1930's?



Over the years, chickens have changed their laying habits. Farmers have managed the birds so as to increase their fall and winter egg production. Trends are continuing for an increased output in the seasons when stored stocks of eggs are used to supplement current production. Because these production trends have been continuous over the last 20 years and offer every indication of continuing further, the monthly volume of egg production in the coming years will show less and less seasonal variation. Therefore, cold storage operators should not expect shell egg storage to regain its prewar volume.

Chickens' Laying Habits Change

I think not. One reason that I don't expect the egg storage traffic to regain its prewar volume is because the laying habits of the American hen have changed. She now lays a larger proportion of her eggs in the fall and winter. What used to be a period of very low egg production has become a period of only relatively low egg production.

The industry recognized this trend and was gradually adjusting to it, by reducing the volume of egg storage through the 1930's. The industry meanwhile was also shortening the duration of the storage period, bringing the last eggs out in December and January, rather than in February as was common in the 1920's.

The growing importance of frozen eggs in the storage picture also reduced the volume stored in shell form.

During the war the emerging pattern was obscured, and later the postwar phenomenon of large-scale price support affected the trend. The effect was to reduce the importance of seasonal storage, because the springtime surplus was bought for price support and dried, rather than stored as shell eggs in the spring for consumption later in the same year.

Egg Drying Limited Storage of Shell Eggs

The net result was to reduce storage activity in 1948-50 by an amount greater than would have occurred under a simple extension of the prewar trends. But in 1951, with an end to large-scale diversion of springtime egg surpluses to the drying plants, the

storage industry will be in a better position to demonstrate its role as a stabilizer of egg supplies and prices. That role will probably call for increased activity in the year ahead, as a reaction from the unusually low level of 1948-50 shell egg operations.

Storage in 1951

The scale of shell egg storage operations in 1951 and in the years immediately following will tell what size the operation ought reasonably be to fit into the current situation. In moving toward this normal level, the industry is not likely to regain the shell egg storage volume of the 1930's, because of (a) the continuing trend toward a seasonal leveling out of egg production on farms, and (b) the growing importance of frozen eggs for use after the months of plentiful fresh egg supply.

Storage Temperatures for Hatching Eggs

INFORMATION on storage temperatures for hatching eggs was contained in a recent issue of the duPont Company's Agricultural News Letter and other publications, source of which was the Beltsville Research Center (Md.) of the United States Department of Agriculture, Bureau of Animal Industry. Figures on temperature were given as follows:

Best temperature, 50 F.

Temperatures of 30 to 40 F are definitely harmful and 60 to 70 F tend to reduce hatchability.

Successful holding period at 50-55 F, 7 to 21 days.

Reporting in Poultry Science for July, 1950, I. L. Kosin obtained 67 percent hatchability with broad breasted bronze turkey eggs with storage for one to two days at 55 to 60 F and 55 to 60 percent with storage for 4 to 8 days. On the basis of fertile eggs (instead of total eggs) these percentages would differ less.

Work by Jull and others reported in Poultry Science in March, 1948, showed that chicken hatching eggs can stand several hours at freezing temperature—even as low as 0 F, but only a few hours. A full day at 20 F was enough to reduce hatchability seriously for both chicken and turkey eggs.

Best advice thus appears to be 50 to 55 F for hatching eggs, with moderate relative humidity. Storage period should be limited to the extent absolutely necessary — T.R.R.F. Information Bulletin.

Price Support Program Reports Losses

A REPORT has been issued by Ralph S. Trigg, president of the Commodity Credit Corporation, U. S. Department of Agriculture, that $2,898,405,000 was invested in CCC price support program loans and inventories as of October 31, 1950, and that the Corporation sustained a net realized loss of $63,670,000 in carrying out this program during the current fiscal year through October. (The net realized loss on the CCC price support program for the fiscal year ended June 30, 1950, was $249,230,000).

Of the total investment of $2,898,405,000, loans outstanding totaled $872,364,000 (including $178,888,000 of commodity loans held by lending agencies and $603,967,000 held by the CCC and $89,509,000 of loans approved but not fully processed) while inventories acquired under loan, purchase agreement, and direct purchase operations represented an investment of $2,026,041,000.

Price-Support operations in three commodities accounted for the bulk of the loan total. These commodities were corn, wheat and tobacco, aggregating a total of $772,650,758. Other commodities were dried eggs, 108,648,358 lbs., costing $114,986,624; butter, 168,889,008 lbs., costing $104,258,780; and cheese, 109,319,543 lbs., costing $36,819,646.

North Atlantic Chapter Annual Meeting

THE annual meeting of the North Atlantic Chapter National Association of Refrigerated Warehouses was held at the Mayflower Hotel, Washington, D. C., Thursday and Friday, November 9 and 10, 1950. Following the cocktail party and dinner Thursday evening, November 9, James K. Knudson, Administrator, Defense Transportation Administration, and Interstate Commerce Commissioner, spoke on "Transportation and Warehousing in the Emergency."

At the session on Friday, November 10, Jack Meagher, Baltimore, Md., acted as moderator for a panel on "Cause and Prevention of Freight Claims." The panel was composed of: A. L. Green, Association of American Railroads, Chicago, Ill.; L. D. Gross, Fruit Growers Express Co., Washington, D. C., and John Hollmeyer, Seaboard Terminal & Refrigerating Co., Jersey City, N. J.

Following this round-table discussion, Col. Martin J. Hudtloff, Director, Transportation and Warehouse Branch, Production and Marketing Administration, U. S. Department of Agriculture, spoke on Refrigerated Storage in the U. S. Department of Agriculture Program." Other speakers during the session included Harold K. Osgood, National Resources Board and Jerry P. Johnson, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

The following officers and executive committee members were elected for the coming year:

Chairman, Jerry P. Johnson, Washington, D. C.

Vice Chairman, C. Bartless Eddy, Providence, R. I.

Secretary, Carleton B. Peacock, Philadelphia, Pa.

Treasurer, Raymond Tuller, Jr., Springfield, Mass.

Executive Committee: Raymond C. Cash, Rochester, N. Y.; Leo J. Fisher, Jersey City, N. J., and Conrad Proebstle, Atlantic City, N. J.

New Fruit Storage Plant

WORK has started on a half million dollar cold storage and freezer plant of around 40,000 sq. ft. in the Pasetta Industrial Tract, Santa Clara, Calif. Site is eight acres on Lafayette St. near Pacific Can Co. Builder is Albert W. Beall who said the Beall Refrigerating Co. will be incorporated for the plant's commercial operation. The plant of 500,000 cu. ft. of refrigerated space will accommodate 5000 tons of cannery fruit and will open early in April.

Mechanical equipment will be so arranged that any of the plant's six rooms can be held at cooler or freezer storage levels, Beall said. Construction will be reinforced concrete. Cork will be the principal insulating material. Beall formerly owned the Santa Clara Packing Co. Thos. C. Kendall, Los Angeles, is the architect.

Committees Appointed

A COMMITTEE to nominate members of the new Executive Committee to be elected at the annual meeting of the National Association of Refrigerated Warehouses has been appointed by President Gagini. The committee is made up of Millard Young, San Francisco; George Gross, Duluth, Minn., and Wayne Wilson, Brooklyn, N. Y.

President Gagini has also appointed the following to the Budgeting Committee: J. P. Johnson, Washington, D. C.; A. B. Efroymson, Cleveland, and A. N. Otis, New York. This group will meet at association headquarters to formulate the 1951 budget.

November 30 Cold Storage Holdings

PUBLIC cooler space on November 30 was reported to be 71 percent occupied, a drop of 1 point during the month of November. The cooler occupancy level, however, was 4 points above the level of a year ago and 2 points above average occupancy for this time of year. Only three regions showed an increase since October 31 in the utilization of cooler space—the Middle Atlantic, South Atlantic and Pacific—the former increasing 3 points and the latter two 1 point each.

Public freezer occupancy also declined 1 point to 77 percent, which compares with an average occupancy of 80 percent and occupancy on November 30, 1949, of 73 percent. Only two cities, Rochester and Detroit, had cooler occupancy above 85 percent. Cities having freezer occupancy of 85 percent or more were Buffalo, Rochester, Philadelphia, Pittsburgh, Cincinnati, Detroit, Milwaukee, Norfolk, Nashville, Los Angeles, San Francisco, San Jose and Modesto.

A net increase of more than a quarter of a billion pounds of foodstuffs brought total weight of cooler and freezer-held commodities to 5.2 billion pounds on November 31, establishing a record weight for commodities held in refrigerated storage. Cooler items amounted to 3.2 billion pounds, which compares with 2.9 billion pounds in storage a year ago this time and average holdings of 2.7 billion pounds. Most of the total increase was due to a net into-storage movement of cooler commodities amounting to 203 million pounds.

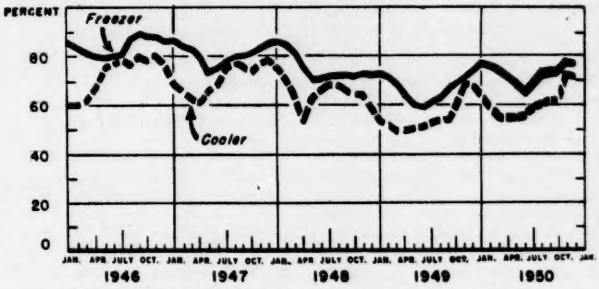
Cooler Items Increase

All cooler items, with the exception of pears, cheese, shell eggs, and dried eggs, showed a net increase in weight during November. The net inmovement of freezer commodities totaled 36 million pounds, bringing total freezer weight to 2 billion pounds. The net into-storage movement of poultry and meats and meat products counteracted the withdrawals of all other freezer stored items.

Fresh apples in storage on November 30 were at an all-time high—39 million bushels. This compares with 33 million bushels in store last year and 36 million bushels, the previous record high on November 30, 1937. Seasonal decline in pear stocks brought total on hand to 2 million bushels. Potatoes in storage were in lesser supply than a month earlier; onions and other fresh vegetables were in greater supply.

More than one and a half times the average seasonal withdrawals of frozen fruits were reported during November. By the end of the month, total stocks amounted to 477 million pounds, down 20 million pounds from a month earlier. Most fruit items reflected net withdrawals during November, particularly orange juice and frozen strawberries. On the other hand, stocks of frozen apples, grapes, and other types of fruit juices continued to increase.

National holdings of frozen vegetables totaled 455 million pounds by the end of last month. Net with-



Occupancy of public refrigerated warehouses, 1946-1950

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Nov. 30, 1950	Oct. 31, 1950	Nov. 30, 1949	Five-year Average
Meat and meat products, lbs.	541,516	404,740	492,509	497,400
Lard and rendered pork fat, lbs.	53,524	52,128	39,808	58,035
Frozen poultry, lbs.	269,074	217,999	267,508	275,573
Creamery butter, lbs.	159,297	208,228	130,452	77,329
American cheese, lbs.	229,174	276,930	175,764	141,523
Other cheese, lbs.	24,488	26,013	16,721	20,089
Shell eggs, cases	58	502	250	710
Frozen eggs, lbs.	75,557	104,378	72,556	133,026
Apples, bu.	39,240	34,451	33,405	28,877
Frozen fruits, lbs.	477,399	497,878	326,934	388,175
Frozen vegetables, lbs.	454,987	457,573	383,658	313,299
Frozen fish, lbs.	164,990	166,105	158,719	153,120

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		Nov. 30, 1950 (%)		Oct. 31, 1950 (%)		Nov. 30, 1949 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	2,999	6,980	69	77	73	72	66	82	58	83
Middle Atlantic	35,858	30,982	76	87	73	87	65	75	69	84
East North Central	29,801	28,569	72	93	78	77	70	70	69	79
West North Central	9,983	15,015	77	76	85	77	71	70	72	78
South Atlantic	8,251	6,527	61	67	60	77	61	75	64	78
East South Central	4,836	3,832	78	84	79	83	73	83	73	78
West South Central	7,164	6,882	59	61	62	56	61	52	66	74
Mountain	1,307	1,118	73	80	73	79	63	69	63	81
Pacific	18,762	21,365	65	78	64	78	71	78	74	77
United States	118,891	121,200	71	77	72	78	67	73	69	80

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent				Net Piling Space (000 Cu. Ft.)		Space Occupied			
			Nov. 30, 1950		Oct. 31, 1950				Nov. 30, 1950		Oct. 31, 1950	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	80	103	84	76	74	70						
Middle Atlantic	1,047	650	65	75	76	85	985	220	97	83	86	85
East North Central	2,475	872	85	88	83	60	3,528	911	93	90	85	79
West North Central	60	815	100	70	97	86	15,365	6,418	86	68	83	63
South Atlantic	164	2,493	28	51	50	18	888	218	85	100	85	99
East South Central							351	94	81	88	82	91
West South Central	202	31	61	94	43	12	2,525	500	100	100	100	100
Mountain							421	366	100	100	100	100
Pacific	3,793	3,208	53	76	54	80	2,835	589	90	92	92	90
United States	7,821	8,172	69	73	72	70	26,898	9,316	89	76	86	71

NOTE:—Blank spaces indicate that insufficient returns were received.

drawals of 3 million pounds compares with 4 million a year ago and average November withdrawals of 7 million pounds. Significant reductions in holdings of green peas, lima and snap beans reported during November more than countered net increases in storage holdings of miscellaneous frozen vegetables, broccoli, brussels sprouts, cauliflower, pumpkin and squash.

Dairy and Poultry

Net withdrawals of butter during November were the largest for any November since 1945 and was the second largest on record for this time of year. By the end of last month the net decrease in butter stocks totaled 49 million pounds, leaving 159 million pounds in storage. This compares with 130 million pounds in store a year earlier and 77 million pounds, the average November 30 stocks.

American Cheddar cheese holdings continued to be at record levels for the month despite significant reductions in stocks during November. The 229 million pounds reported in storage at the end of last month compares with the previous November 30 high of 177 million pounds in 1943. Holdings of American cheese were down 48 million pounds from a month earlier, as stocks in New York, Illinois, and Wisconsin were withdrawn in sizeable amounts.

Shell egg stocks were down to 58 thousand cases by November 30, the lowest for this time of year since 1916. Frozen egg stocks were also at a near record low for this time of year. Total holdings amounted to 76 million pounds as compared with 133 million pounds average end-of-the-month stocks.

Poultry continued to show seasonal gains. During November, a net into-storage movement of 51 million pounds brought total holdings to 269 million pounds. Turkey holdings reflected a net gain of 30 million pounds while roasters and fowls increased by 5 and 9 million pounds, respectively.

Meats and Meat Products

National storage stocks of beef increased by 19 million pounds during November, raising the total to 114 million pounds. These supplies were greater than last year but about 7 million pounds below average. Greater than average amounts of pork moved into storage during November and by the end of the month the total in store amounted to 319 million pounds. Frozen pork comprised 120 million pounds of this amount.

A slight increase in sausage and sausage room products was reported during November, also in stocks of lamb, mutton, and veal. Total meats on hand November 30 at 542 million pounds compares with 493 in store last year and the November 30 average of 497 million pounds. Lard and rendered pork fat showed only a million pound increase over last month with 54 million pounds reported on hand November 30.

Fishery Products

A seasonal decline of about a million pounds reduced total holdings of fishery products to 165 million pounds. This compares with 159 million pounds in store last year and average November 30 stocks of 153 million pounds. Cured fishery products of 21 million pounds raised national holdings of all classes of fish in storage to 186 million pounds.

Storage Outlook

Cooler occupancy started its seasonal decline in November, and, according to past records, should continue to decline until spring when shell eggs begin to move into store. The expected decrease during December according to past performance is 5 points, but during the last quarter of this year cooler occupancy increased by greater than average amounts, and in starting its seasonal decline did not fall off as much as was expected.

With record holdings of apples in storage and near record holdings of cheese, the decline during December may not be as great as the 5-year average would indicate. Freezer space utilization was relatively unchanged from a month earlier. Here too, occupancy during December may not fall off as much as past records would indicate since the amounts of foodstuffs in storage are at record levels. If there is any seasonal readjustment, occupancy may only be about a point below the November 30 level of 77 percent.

Foods in Storage Provide Vital Reserves

GOVERNMENT-OWNED stocks of perishable foods, including 159 million pounds of butter, 50 million pounds of cheese, and 96 million pounds of dried eggs have become "vital reserves" instead of "burdensome surpluses" since the Korean invasion, according to M. J. Hudtloff, Director of Transportation and Warehousing for the United States Department of Agriculture.

"The Department's stocks of food, feed, and fiber are doing much to fill demands and stabilize prices." Mr. Hudtloff declared in an address to the North Atlantic States Chapter of the National Association of Refrigerated Warehouses.

In addition to the record stocks of perishable foods on hand as of November, 1950, there were in the government inventory at the outbreak of the Korean war, several million bushels of corn, wheat, and other foodstuffs.

Defense requirements have changed the storage situation greatly, Hudtloff concluded. "Several months ago, our main problem was one of securing sufficient storage space. Today we are concerned with the matter of moving commodities out of storage in sufficient quantities to meet emergency requirements."

Annual Report on Cold Storage Holdings

THE volume of perishable foods stored in refrigerated warehouses each month during 1950 and the two previous years, and the five-year average is shown in the following tables, compiled from monthly reports by the Production and Marketing Administration of the U. S. Department of Agriculture. Generally the volume held up well, commodities generally showing increases over last year, the year before and the five-year average. Creamery butter especially showed a huge increase for every month of the year as did American cheese and frozen vegetables, with the exception of the month of May. Frozen meats showed a decrease the first six months but increases the balance of the year brought the average somewhat above last year.

TABLE I FROZEN BEEF, PORK, LAMB AND MUTTON (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	731,608	762,887	856,710	671,125
Feb. 1.....	847,874	888,551	996,133	784,352
Mar. 1.....	816,653	903,050	1,031,014	792,553
Apr. 1.....	779,845	860,785	967,732	761,953
May 1.....	748,065	791,409	851,447	708,984
June 1.....	671,649	672,798	790,039	658,530
July 1.....	632,687	612,391	778,747	629,861
Aug. 1.....	548,280	547,201	685,946	587,409
Sept. 1.....	462,422	451,368	528,169	486,007
Oct. 1.....	406,015	362,050	394,970	373,112
Nov. 1.....	405,233	370,408	382,124	369,576
Dec. 1.....	541,516	492,509	535,056	497,400

Frozen meat showed a decrease the first six months but an increase the balance over last year and a decrease the first nine months and an increase the last three months over the year before.

TABLE II. FROZEN POULTRY (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	202,085	160,834	317,463	283,963
Feb. 1.....	294,645	148,418	293,640	267,667
Mar. 1.....	259,144	131,496	262,374	243,663
Apr. 1.....	212,678	108,732	205,745	203,739
May 1.....	166,628	89,205	153,424	165,093
June 1.....	136,608	77,823	117,935	148,113
July 1.....	122,701	74,733	99,507	123,324
Aug. 1.....	102,975	71,261	91,186	123,823
Sept. 1.....	106,716	83,466	88,234	135,211
Oct. 1.....	140,126	132,380	108,368	157,662
Nov. 1.....	217,801	211,517	154,617	228,789
Dec. 1.....	269,074	267,508	171,472	275 573

Frozen poultry showed a considerable increase for every month over last year but averaging about the same over the year before. There was an increase the first five months but a decrease the balance of the year over the five-year average.

TABLE III. CREAMERY BUTTER (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	113,166	33,615	23,672	39,811
Feb. 1.....	104,596	18,737	13,399	24,284
Mar. 1.....	94,085	8,718	7,323	15,311
Apr. 1.....	94,178	6,318	3,482	12,475
May 1.....	108,610	15,338	4,449	17,634
June 1.....	135,805	51,056	18,638	36,874
July 1.....	182,479	102,701	53,073	77,743
Aug. 1.....	230,652	136,786	83,105	111,489
Sept. 1.....	237,212	153,855	97,624	126,265
Oct. 1.....	232,708	154,455	93,850	117,807
Nov. 1.....	207,795	144,819	83,412	104,918
Dec. 1.....	159,297	130,452	60,214	77,329

Creamery butter showed a huge increase over last year, the year before and the five-year average.

TABLE IV. AMERICAN CHEESE (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	168,037	126,534	128,888	118,574
Feb. 1.....	159,276	116,779	107,236	106,365
Mar. 1.....	149,867	111,073	93,570	95,888
Apr. 1.....	143,303	105,608	90,469	88,204
May 1.....	153,737	109,920	91,907	94,459
June 1.....	184,998	117,021	106,712	110,178
July 1.....	228,574	140,859	140,038	137,690
Aug. 1.....	260,180	162,346	168,809	159,857
Sept. 1.....	284,954	183,208	185,324	174,712
Oct. 1.....	290,664	188,259	182,449	173,776
Nov. 1.....	277,597	185,839	167,535	159,996
Dec. 1.....	229,174	175,764	140,791	141,523

American cheese also showed an increase over last year, the year before and the five-year average.

TABLE V. SHELL EGGS (000 CASES)

	1950	1949	1948	5-year average
Jan. 1.....	97	250	196	329
Feb. 1.....	379	152	269	255
Mar. 1.....	743	144	374	568
Apr. 1.....	1,253	530	1,165	1,552
May 1.....	2,128	954	3,091	3,207
June 1.....	3,413	1,943	4,903	4,883
July 1.....	3,696	2,290	5,669	5,631
Aug. 1.....	3,165	1,936	5,525	5,438
Sept. 1.....	2,585	1,426	4,608	4,514
Oct. 1.....	1,568	810	3,290	3,273
Nov. 1.....	494	501	1,685	1,851
Dec. 1.....	58	250	444	710

Shell eggs fluctuated, but generally showed considerable increase over last year and generally a decrease over last year and the five-year average.

TABLE VI. FROZEN EGGS (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	53,888	104,932	138,192	128,183
Feb. 1.....	55,017	71,532	122,438	97,095
Mar. 1.....	72,986	58,621	120,665	91,250
Apr. 1.....	115,320	77,319	143,253	116,763
May 1.....	155,358	107,058	195,594	165,319
June 1.....	178,667	141,361	248,574	213,880
July 1.....	187,744	166,582	260,748	238,323
Aug. 1.....	175,420	168,394	257,367	235,222
Sept. 1.....	155,374	146,868	233,431	213,799
Oct. 1.....	132,497	121,476	200,968	189,932
Nov. 1.....	104,079	96,382	169,287	161,236
Dec. 1.....	75,557	72,556	139,298	133,026

Frozen eggs showed a decrease January and February but an increase all the other months over last year, and a decrease for every month over last year, and the five-year average.

TABLE VII. FROZEN FRUITS (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	303,202	335,940	369,470	364,061
Feb. 1.....	279,697	317,695	343,539	341,006
Mar. 1.....	264,681	301,249	316,819	316,562
Apr. 1.....	254,619	266,581	281,762	286,182
May 1.....	243,743	237,419	247,895	253,011
June 1.....	283,650	237,856	250,326	250,685
July 1.....	334,208	255,787	280,744	267,205
Aug. 1.....	414,817	327,090	340,894	335,764
Sept. 1.....	466,165	339,588	371,565	373,537
Oct. 1.....	466,522	355,552	364,115	396,925
Nov. 1.....	490,509	342,565	362,423	400,469
Dec. 1.....	477,399	326,934	346,941	388,175

Frozen fruits showed a decrease the first four months but an increase the balance of the year over last year and the year before and for the five-year average.

TABLE VIII. FROZEN VEGETABLES (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	363,965	281,825	291,752	252,957
Feb. 1.....	337,600	262,047	254,853	231,066
Mar. 1.....	304,796	229,506	226,619	206,596
Apr. 1.....	269,653	206,061	196,628	185,229
May 1.....	167,995	269,980	176,118	241,016
June 1.....	221,762	186,821	160,423	159,955
July 1.....	235,665	219,515	181,526	183,892
Aug. 1.....	275,465	237,847	214,076	222,442
Sept. 1.....	362,170	315,788	266,910	271,610
Oct. 1.....	434,789	368,552	311,734	308,049
Nov. 1.....	453,129	387,681	311,968	320,497
Dec. 1.....	454,987	383,658	308,829	313,299

Frozen vegetables showed an increase for each month except May over last year, the year before, and the five-year average.

TABLE IX. APPLES (000 BUSHELS)

	1950	1949	1948	5-year average
Jan. 1.....	26,826	17,813	29,807	24,761
Feb. 1.....	19,365	12,971	23,339	18,406
Mar. 1.....	12,794	9,028	16,567	12,703
Apr. 1.....	7,120	5,491	10,244	7,685
May 1.....	3,667	3,318	4,896	3,838
June 1.....	1,295	1,294	1,855	1,402
July 1.....	147	343	392	.....
Aug. 1.....	106	175	148	.....
Sept. 1.....	103	412	214	.....
Oct. 1.....	6,597	14,777	4,724	8,933
Nov. 1.....	34,052	35,224	22,413	28,585
Dec. 1.....	39,240	33,405	21,836	28,877

Apples showed an increase for the first six months but a decrease for the balance of the year over last year and a decrease the first nine months and an increase the last three months over the year before. Compared with the five-year average, there was an increase the first three months but a decrease the balance of the year except for the month of November.

TABLE X. FROZEN FISH (000 POUNDS)

	1950	1949	1948	5-year average
Jan. 1.....	150,036	150,974	133,844	137,532
Feb. 1.....	125,516	127,635	112,046	112,286
Mar. 1.....	106,346	104,138	90,491	88,917
Apr. 1.....	86,947	82,722	76,743	72,360
May 1.....	97,895	88,615	16,198	82,230
June 1.....	95,889	91,453	85,601	76,405
July 1.....	113,727	114,031	100,537	92,194
Aug. 1.....	126,845	127,217	127,474	114,532
Sept. 1.....	154,101	146,344	135,928	135,321
Oct. 1.....	158,170	150,608	140,161	140,156
Nov. 1.....	166,440	156,077	148,049	146,436
Dec. 1.....	164,990	158,719	158,008	153,120

Frozen fish was up and down compared to last year, showing a decrease the first two months, an increase the next four months, a decrease the next two months and an increase the last four months over last year. As compared to the year before, there was an increase for every month except August. As compared to the five-year average, there was an increase each month.

Poultry Institute Announces Fact Finding Conference

FORTY speakers, armed with scientific and practical facts, will launch an all-out offensive against major poultry and egg production and marketing problems at the Institute of American Poultry Industries' Silver Anniversary Fact Finding Conference, scheduled to be held in the Municipal Auditorium, Kansas City, February 11, 12 and 13.

Registration and exhibits open at 10:00 a.m. Sunday, the 11th. The Conference program opens at 2:00 Sunday afternoon, with the Egg Products Clinic. Dr. George F. Stewart, Iowa Agricultural Experiment Station, will chairman this first session, which will include talks by leading frozen and dried egg authorities on acidification, pasteurization, egg products substitutes, and changing requirements for egg products used in prepared baking mixes.

Monday morning the new Merchandising Clinic, chairmanned by George Vail, Birds-Eye Snider, will feature profitable packaging techniques, successful merchandising "case histories," a survey of retailers' reactions to poultry and egg products, and a close-up view of the Poultry and Egg National Board's retail training program.

Prominent Food and Drug and Public Health officials will take part in the Good Housekeeping Clinic Monday afternoon, where the new edition of the Institute's Suggested Sanitary Standards for Poultry Plants will make its debut.

Allan B. Kline, president of the American Farm Bureau Federation, will speak at the Conference banquet in the Main Arena Monday evening.

At the Production Clinic Tuesday morning, February 12, speakers will present recommendations for sound broiler financing, a new approach to interior egg quality problems, and the latest trends in the production of "family size" turkeys.

How the nation's defense program will affect the poultry and egg industry, and the outlook for 1951 egg production and consumption is scheduled for the Tuesday afternoon session.

Field Grading Apples Cuts Costs and Bruising

GRADING apples in Michigan orchards with an experimental field grader, reduced fruit bruising and cut grading costs, research engineers of the U. S. Department of Agriculture report. Working together, horticulturists of the Michigan Agricultural Experiment Station and engineers of the Bureau of Plant Industry, Soils, and Agricultural Engineering proved in their trials that field grading of apples could pay big dividends in many commercial Michigan orchards.

Orchard graded apples go directly into the containers in which they move to market, or to cold storage, the Department workers point out. This eliminates several steps in the grading and packing process, and reduces the bruising that normally accompanies these operations.

Also, growers who store their fruit "orchard run" (as it is picked from the trees) ordinarily pay cartage and storage charges on a large percentage of their crop that later goes to the processing outlets. By grading in the field the small and defective fruit can be eliminated and the growers pay storage charges on number one fruit only.

The experimental grader used in the trials consisted of a receiving belt for the fruit, an eliminator section, a sorting belt, and a filling station. The entire assembly was mounted on skids that made it possible to move the machine through the orchard as harvesting progressed. In operation, the field grader was spotted between 4 to 8 trees from which apples were being harvested. The pickers emptied their apple buckets directly on the grader receiving belt. The experimental grader was able to handle 50 to 60 bushels an hour—apples from the buckets of 6 to 8 average pickers.

Fish Concern Adds Cold Storage Room

A NEW cold storage room, 130 feet long by 48 feet wide and a ceiling height of 12 feet has been put in operation by E. E. Saunders & Co., at Pensacola, Fla. The plant was designed chiefly to store frozen fish and other seafood and will hold about 800,000 lbs.

THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE INDUSTRIES

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Ice Industry Review Looks To Better Year in 1951—

Review of probable outlook for 1951 and conditions affecting the ice business during 1950 as seen by representative ice distributors.

THIS MONTH IN BRIEF

The annual review of the ice industry for 1950, from expressions of leading ice distributors, shows expectations of a better year in 1951. Sales were down in 1950, blemed largely on an unseasonably cool summer, but sales of processed ice continued to show increases. Growing use of vending stations also becomes a factor in increased sales to consumers.

The second field school of the NAII Personnel Training and Marketing Department was held at Menlo Park, Calif., attended by sixteen men who were awarded certificates of graduation.

Annual conventions during the past month were held by the Illinois and Delta States Associations of Ice Industries. Merchandising, diversification, application of research, new ways of selling ice, advertising, were some of the subjects discussed.

Tests on packing western-grown lettuce, conducted by the Western Growers Association in cooperation with the United States Department of Agriculture show new facts in relation to the use of container ice.

THIS review of the ice industry, published as an annual feature of Ice and Refrigeration, presents the views of leading ice manufacturers and distributors on the probable outlook for 1951 and conditions that affected the business during 1950. The outlook has a cautionary tone, but it is hoped and expected that ice sales will be better in 1951.

The ice industry in point of dollar sales occupies a position high up in comparison with sales of all industries. If earlier estimates are borne out by the actual 1950 sales, the dollar income for that year will approximate a total of 275 million dollars.

Sales were down in 1950, the general cool summer being a prime cause for the decrease. But there is a grain of comfort and a hint possibly of the way out in the fact that the sales of processed ice generally are up instead of down. Another fact is that net profits generally were more favorable than tonnage, this being brought about by (1) greatest shrinkage was in domestic with its relatively high service cost (2) increased prices (3) increased sales of processed ice (4) reduced overhead.

Another factor, not specifically called for in this review, is the growing use of ice vending stations. Some pioneers have gone into this field of merchandising with great success. Others have taken a "wait and see" attitude, but many have come around to the opinion that the situation is well enough clarified to warrant spotting a machine or two in known favorable locations. The chances are that 1951 will be a good year for vending machines.

Refrigerator and appliance sales were down in most cases, but a better year is hoped for in 1951. The outlook for chests and other small appliances is especially favorable. Rental plans on refrigerators helped to take up some of the slack.

Outlook for 1951

THE outlook for the ice business during 1951, following three summers of declining sales, is that this trend will be reversed (weather permitting), but there are other factors such as increased costs, effectiveness of merchandising, and manpower that may prove to be dampers on over-optimism. A favorable factor is that sales of processed ice have not decreased and it is expected that its increase in 1951 will balance any continued decline in block ice sales. Another angle is that many ice companies are taking on sidelines which will supplement the revenue from ice sales.

Arkansas—Our company is not pessimistic regarding 1951. We believe that with normal weather conditions and normal crop harvests, we will have very profitable operations at all of our locations.

Arkansas—The outlook for the coming year is about the same as 1950.

Canada—We are sanguine that a campaign of intelligent promotion of our product combined with the active selling of refrigerators and canvass of new homes will bear abundant fruit, and not only maintain but extend the gains made in recent years. First-class delivery equipment, a good supervisory staff and competent men are of course essential to success.

Canada—A number of companies are going to install vending machines to make available their product to people who do not normally buy from them. 1951 will be

the first year that anything has been done in this direction and while we do not look for tremendous numbers of vending machines to be installed, it is evident that there will be a sufficient number installed to estimate the possibilities. It is apparent that the sale of chicken on ice will become more widespread in 1951 than it was in 1950 when this type of business had its inception.

Colorado—We think our sales of ice for 1951 will be increased over 1950. The reason,—increase in population and the Army moving in here.

Georgia—The 1951 outlook is a matter of careful month to month planning. Due to new competitive conditions here, there can be no comparison of the past and the future. The territory demands apparently should stand up pretty well.

Georgia—Even with favorable weather conditions, I do not look for any great increase in sales for 1951 unless the production of mechanical refrigerators and point of use ice making machines are curtailed much more than at present. Our sales for 1950 do not reflect the full impact of the sale of mechanical units which were sold in June and July. Government requirements around Army camps and defense areas should increase the demand for ice sharply, but many of the defense housing projects which used ice during World War II have since been converted to mechanical refrigeration. We anticipate a very tight manpower situation in 1951 and a further increase in costs, so have been making some price adjustments during recent weeks at the domestic and small commercial level. These adjustments will hardly do more than recover the increased costs, so I do not look for much increase in our ice profits, all of which leads to the conclusion that a company cannot make it on present day volume without diversification in other lines to help absorb the overhead and other items of expense. I believe that the production of mechanical equipment will be sharply curtailed and that we will have a better market for ice refrigerators. I further feel that if we make an honest sales effort at the local level, we can capture some new ice business if we capitalize on the opportunities which have been developed by the Research Department of the National Association.

Illinois—I doubt if a better job will be done in 1951 due to loss of manpower and multitudinous perplexities in management. 1951 is going to be rough.

Kansas—Outlook for 1951? The worst is over. A little further retreat, perhaps; then consolidation. Commercial use will hold its own; packaged ice sales will increase. The problem is how to make ice as available as Coca Cola.

Kentucky—We are looking forward for a better and more profitable year in 1951 (weather permitting).

Kentucky—Our outlook for 1951 is very bright. We feel that any kind of decent weather will produce considerably more tonnage than 1950 although slightly less than 1949. With proper control and economies of costs and with a fair price for the product, 1951 should produce a satisfactory profit.

Massachusetts — From all appearances the ice business will not drop off much in 1951, and may be much better, especially if the weatherman will favor us. We know it can be better hereabouts, if, through the Cape Cod Ice Dealers' Association we can break the defeatist attitude of the dealers, make more effective use of equipment to sell sized ice for vegetable and poultry icing, and more effective selling of processed ice to hotels, restaurants and other store trade, a more profitable year is in store for us in 1951. Profits were very small in 1950, but we hope in 1951, by a reduction on operating costs, better merchandise, more advertising of ice in all its forms and letting people know more of the availability and convenience of ice, sales can be greatly increased. We are going to try door-step delivery of ten and twenty-five pound bags of cube sized ice, the same as milk deliveries are made. From our experience, people still want ice in some form, but it must be made convenient for them to get it. It is not a necessity any more in many homes.

Missouri—For 1951, we will go ahead as in 1950 in actively trying to merchandise our appliances as well as trying to find new outlets for use of ice. We feel that the weatherman surely will give us a better break next summer and if so, we expect to have increased sales for 1951.

New York—With the clamping down of restrictions, we believe the homemade-ice-maker will be off the market and that our sales will be good in 1951. We'll need strong leadership in Washington, if we are to get the priorities we need for the maintenance of our plants and manpower. We are making every effort to put our plants in good repair, and will carry as many spare parts as we can foresee the need of.

North Carolina—I am not at all optimistic about the net results of operations for 1951. With normal weather conditions, we will probably sell as many tons of ice as were sold in 1950, and in our case, we are going to have more revenue per ton than for the past years. On the other hand, the ever-increasing costs of operation are now up to a point where ice plants in competitive markets are going to have a hard time showing a net profit for the year just ahead of us. In our case, we hope to be able to supplement our ice revenue from other items such as coal, fuel oil, appliances, cold storage and some other miscellaneous items, so as to make 1951 a profitable year. All of us sincerely hope, and I believe that we will do as well in 1951 as we did in 1950 on the sale of equipment.

Ohio—The outlook should be for greater tonnage in 1951, if we have a warmer summer. The fact that people cannot get a mechanical without a substantial down payment will also help. Sales were so low in 1950 that they surely cannot go much lower. There will always be some ice sold. It could be that there are too many ice companies.

Utah—Because of the slowing down of electric refrigerator sales, and if climatic conditions are favorable, 1951 will be a better year than 1950.

Washington—We expect to do approximately the same volume in 1951 as in 1950 with a small increase in sized ice to balance the loss in block ice in the domestic field.

Ice Sales Decrease

THE most important phase of the entire picture is that ice sales were down in 1950, following the pattern set in 1947, after an all-time high had been established in 1946. In general, these reports follow the trend indicated by the national decline which was 21.6 percent. The chief cause appears to have been an unusually cool summer, but the inroads of mechanical refrigeration, both city and rural, are listed also. Further decline in 1951, it is suggested, can be overcome by better service and more effort to sell equipment.

Arkansas—Ice sales in 1950 were 33 percent less than in 1949 (money value).

Canada—The volume of sales was about 5.3 percent below that of 1949, largely due to a cool summer. Sales of 1949 for this company, it is interesting to note, were above those of 1948, but that summer of 1949 was unusually warm. It is noteworthy that in five years the volume of winter sales—December, January and February—has increased 128 percent. Curtailment of delivery, or rather less frequent calls with the larger refrigerators, has made it possible to service a greater number of homes on a more economical basis.

Canada—The ice business in Canada in 1950 did not enjoy the tonnage that it did in 1949 but it certainly did not have nearly so large a decrease as did the companies in the United States, even though we had a particularly cool summer. This was due to the fact that more companies embarked upon a complete refrigeration plan of selling refrigerators, which is similar to the rental plan used by some companies in the United States.

Colorado—Our sales were less by 40 percent compared to 1949.

Colorado—Our tonnage was off 20.5 percent.

Georgia—Our sales have decreased in this section for three successive years and the decrease at our properties for 1950 will approximate 25 percent. The decrease has all been in block ice sales, and in fact, we have been showing a consistent increase of 10 to 15 percent in processed ice sales each year, but this portion of our volume is so small that it is not felt very much.

Georgia—Our ice sales for 1950 exceeded those of 1949 due to increased use of ice in processing of poultry. Commercial deliveries increased about 10 percent. However 1951 wil be off sharply for us due to the installation of another manufacturing plant in our territory.

Illinois—Our tonnage is down some 45 percent as compared to 1947 the peak year, 25 percent less than 1949 and we have to go back to 1940 for comparative tonnage and even then we are off a small percent.

Iowa—Our business has declined approximately 25 percent this year—possibly 10 percent to mechanical competition and 15 percent to the weatherman. The difficulty is that costs are practically the same.

Kansas—Total tonnage was down 1/3; dollar volume down 1/5; net profit down 1/10. This is where the volume shrinkage hit hardest: (1) domestic routes; (2) out-of-town dealers who sell to farmers. And this is the reason: (1) inroad of the home mechanicals; (2) extension of rural electrification which carried the same trend to the country.

Kentucky—Ice sales were approximately 10 percent lower in 1950 than in 1949.

Kentucky—Tons of ice sold for 1950 are 25 percent less than for 1949. Dollar income from ice is reduced approximately the same percentage.

Massachusetts—From 1948 to 1949 ice sales dropped in our territory about 17½ percent, and in 1950 dropped 7.6 percent but we do not look for much more decrease as we think any further decline in household ice business can be overcome by better service, more and better dealer education, more effort to sell equipment, advertising, and the sale of sized ice in wet proof bags.

Missouri—Ice sales for 1950 are approximately 22 percent below sales for 1949.

New York—The dollar value of ice sales in Central New York was less than in 1949, and probably 25 percent less in tonnage.

North Carolina—Our tonnage was off by approximately 25 percent in comparing 1950 with 1949.

Ohio—The year 1950 will be the poorest ice year we had since 1940. Our sales in 1950 are less than 50 percent of the best year we ever had which was 1947. Prices were the same in both years.

Texas—Our ice sales were considerably less in 1950 than in 1949. A large percentage of this I would say was due to unfavorable weather again this year but in addition to that there is no doubt but what we have lost considerable tonnage to small ice-making machines. Another factor is that there definitely is not as much free money in this area as in years past which has affected the bars and taverns to the extent that they are using less ice.

Utah—Our retail ice sales were off 30 percent in 1950.

Washington—Our ice sales were lower in 1950 by some 1300 tons or 16 percent. The sized ice sales however were up 8 percent over 1949 and now constitute approximately 20 percent of all sales.

Increased Prices

CONTRARY to reports of previous years, in the majority of cases prices were increased as a means of keeping step with rising costs, and to beat possible price restrictions. This, it is hoped, will offset to some extent any declining revenues that may come about in 1951; although the familiar fear is expressed by some that an increase in price would be liable to restrict sales.

Arkansas—Prices were increased in one town in which we operate from 60 to 70 cents per cwt. All other towns remain the same as in 1949.

Canada—There has been no price advance this year, but all-round wage increases have been made to help employes keep pace with the inexorable rise of living costs. Our year is likely to show a lower net return, but at the same time, it must be said that an increase in price to meet the seasonal condition would probably have restricted the output and was therefore not desirable.

Colorado—There was no price increase from our company.

Colorado—There has been no increase in prices.

Georgia—Prices of platform ice have been increased from 40 cents per 100 lbs. to 50 cents per 100 lbs. Discounts on domestic coupon books have been eliminated.

Georgia—Our unit costs have gone up some 15 percent due largely to the decrease in volume, although since July, we have had increases of some 10 percent in labor as well as a noticeable increase in supplies, particularly in gasoline, tires, canvas goods and paper bags.

Illinois—Prices in some cases have been increased, particularly since Korea when it became apparent that we would be subject to price controls, restrictions, etc. I would say that an average of about 10 percent would catch it.

Illinois—We raised prices about ten cents per 100 lbs. but with the loss in tonnage, this did not make up for increase in costs of doing business. Taxes, insurance, labor, materials, distances between stops, tons per man per day, all have increased considerably more than the slight increase in price.

Kansas—We established a 25 percent increase in prices, long overdue.

Kentucky—An increase of 10 cents per cwt was made for ice delivered and at the platform effective December 1, 1950.

Kentucky—Ice prices remained about the same in this section of the country. Some increases were made in late summer on ice sold in paper bags due to the increase in cost of paper. One company made a 10 cent per ewt increase in the late fall on domestic and small commercial deliveries of ice.

Massachusetts—We have been unable to increase the price of block ice, as it would bring the cost of running an ice refrigerator too high, and we have some trouble with outside ice manufacturers trying to keep their capacity up by coming into our territory and underselling us to our dealers. The only way we see to increase the price per ton is by sizing and selling by the bag, which averages about 35 percent per ton more than we can get for block ice. The cost of bags and sizing reduces this percentage down to a net of about 21 percent.

Missouri—We did not have any increase in price during 1950 nor do we anticipate any increase next year.

New York—We have had an increase of 6 percent in wages and have made an increase in ice prices amounting to about $1 per ton. However, increased costs of maintenance, insurance, taxes and overhead in general have kept our costs out of line with income.

North Carolina—We raised our retail selling price from 60 to 70 cents per hundred late in the season, and while it did us very little good for this year, we hope that it will offset part of our decline in tonnage and costs of operation for another year.

Texas—There have been no changes in prices in this area during the year.

Utah—We increased our prices 10 percent during the year.

Costs Continue Up

COSTS of doing business continue to climb (with one exception) resulting in increased prices, mentioned above, or decreased profits. In every case they were not in line with shrinking revenues.

Arkansas—Our operating costs were down considerably from 1949, however they lack a great deal of being down as much as our revenues.

Colorado—Costs were not in line with income. We had approximately a ten percent increase in cost, but no increase in sales price.

Canada—The wage demands of labor is such that profits on natural ice are whittled to a minimum.

Colorado—Per ton costs are up slightly with income down 19 percent.

Iowa—With continuing high costs, we may find it unprofitable to continue operating rural routes.

Kentucky—Costs have not decreased proportionately with reduced sales, in fact certain items of expense have increased. Total costs have decreased but with reduced tonnage, the cost to manufacture and deliver a ton of ice increased on a unit basis.

North Carolina—Our costs of operation were not in line with our revenue for the past year. We very definitely were not able to reduce our costs at the same rate of shrinking revenue.

Ohio—The cost of manufactured ice in 1940 was $2.10 per ton. The figures exclude overhead, taxes, depreciation, etc. They include labor, power, and all the costs from engine room to delivery platform. This year our costs on the same basis will be close to $4.00 per ton. Our costs, too, will be about 60 cents per ton higher than 1949.

Texas—I would say our costs would have been in line with last year had our volume remained the same; however, since our volume of sales was off it ran our costs out of line.

Utah—Our costs were not in line with income as compared with last year or previous years—they were greater.

Washington—As there was no increase in our ice prices, the costs of operation were not in line with income.

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Selling Processed Ice

THE one bright spot in an otherwise pretty gloomy picture is that while the sales of block ice continued down, those of processed ice continued to increase. Illustrating this trend, one company reports an increase of 5 percent in prepared ice while total sales were off 20.5 percent. Another reports 50 percent of their sales in the form of cube and crushed ice and they expect this proportion to increase in 1951. The outlook for 1951, in nearly all instances, is for increased sales of prepared ice.

Arkansas—We sell crushed and sized ice. About 88 percent of our business is block ice and the balance crushed or sized. Our sized ice business grows each year. Crushed and sized ice is holding up much better than block ice as far as sales volume is concerned. We will sell less sized ice than in 1949, but more crushed ice.

Canada—The market for sized ice is expanding more rapidly each year, as new uses develop, such as broken ice in mesh bags, which the dairies use between cases of milk, for the display of cut-up chicken, and supplementing the cube trays of electric refrigerators. Our sales of sized ice, including cubes, were 3.5 percent of the total ice output, excluding tonnage for car icing.

Colorado—We are selling crushed ice. This amounts to 21 percent compared to block ice.

Colorado—Our sized ice and ice cube sales in 1950 are 33.5 percent of total sales. We show an increase of 5 percent in prepared ice sales in 1950 over 1949, though our total sales are off 20.5 percent. We expect 1951 sales to follow this trend.

Georgia—We have sold sized ice for a number of years and the volume has been increasing steadily. However, the percentage is small in comparison to block ice.

Illinois—We sell crushed ice and it is showing some increase but in a small community we do not expect to make up in such sales what we are losing to mechanicals in block ice. Our luxury ice for 1950 was a very small amount due to extreme cool weather, with only three days of the year 90 degrees or higher does not help make picnics and extra uses of ice very demanding.

Illinois—The sales of processed ice are increasing, the sale of block ice is decreasing. Looks like this will be a continuing trend.

Iowa—Our crushed and sized ice sales still are about 15 to 20 percent of our retail sales. Our crushed and sized ice is sold only at the retail level. We have urged and several dealers have installed crushers to help supply crushed ice in most of the territory. With a good season the crushed and packaged ice sales would be a greater part of the total. We did a nice business with packaged ice even with the cool season. Our vending machine in the downtown district was by far our most profitable operation.

Kentucky—We are selling approximately 15 percent of our ice in crushed and sized form. The sale of the smaller sizes is growing slowly but steadily.

Kentucky—Our sized ice sales were 15½ percent of total ice sales for 1950. Sized ice sales have increased each year with an increase of 12 percent in tonnage for 1950 compared with 1949. We expect some increase in this type of sales for 1951.

Massachusetts—We doubled our output of processed ice in 1950 over 1949, and we think it can be doubled again in 1951. About 7¼ percent of our tonnage was processed in 1949. As a winter business it holds up better than block ice.

Missouri—We do sell sized ice which amounts to approximately 25 percent of our total tonnage. Our sales of sized ice have increased considerably during 1950 and we expect additional increase in 1951.

New York—The sale of ice in prepared sizes (we don't sell crushed ice) and ice cubes, have helped in holding ice users and in our dollar income. Between 40 and 45 percent of our sales are in processed ice and we look forward to a greater percent increase in 1951.

North Carolina—Our crushed ice business is increasing but in most cases it is only replacing block ice. Very little additional business is being created in our territory by the increase in the sale of processed ice. Our percentage of crushed ice accounts for approximately 15 percent of our total, and on a percentage basis is larger than for last year. It is our thought that a larger percentage of our ice will be sold as crushed ice during 1951 than was sold as crushed ice during 1950. But since a large portion of our business comes from small towns and rural territories, we do not have the potential market for prepared ice that are in some of the large industrial centers.

Ohio—Crushed ice is increasing in demand, but not enough to overcome the decrease in block ice sales.

Texas—We do sell and have for a number of years sold sized and crushed ice with the happy experience that this is one phase of the ice business that continues to grow. Our sales this year of processed ice have been about the same as a year ago even with adverse weather conditions. We expect to increase the sales of processed ice even more in 1951 by devoting additional effort and advertising to this phase of our business.

Utah—We are selling cube and crushed ice in an amount of 50 percent of the total sales. The cube and crushed ice sales are greater than in previous years and we expect them to be still greater in 1951.

Washington—The National Association should concentrate on sized ice, as that is the big field for expansion in 1951.

Selling Refrigerators and Other Appliances

THE downward trend in sales of refrigerators and other ice-using appliances noted last year is repeated again this year. The importance of this work is not minimized; all those who have set up such a program plan to continue it, and in nearly all cases they expect to do better in 1951. Bypassing resistance to outright sales, rental plans have been found satisfactory as a means of placing both domestic and commercial refrigerators in service. Chests and other small appliances seem to sell better than refrigerators.

Arkansas—We sell all ice appliances and carry the paper ourselves. Our appliance sales are only 30 percent as great as in 1949, but due to local conditions and weather which had an adverse effect on sales we expect to do much better in 1951 than in 1950, but not as much as in 1949.

Canada—We regard the marketing of ice refrigerators as a condition indispensable to maintaining our domestic market, combined of course with a trained and responsible personnel, including delivery men.

Canada—There was, for the first time, a sustained effort in merchandising vegetable cases and a number of companies did an extremely good job in this direction.

Colorado—Our sales of refrigerators and other ice-using appliances in 1950 were not satisfactory. We expect to do better in 1951.

Colorado—During the 1950 season we used the rental plan in our refrigerator department and found it satisfactory. We will continue the plan in 1951.

Georgia—Our ice refrigerator sales were practically the same as a year ago despite the mechanical refrigerators sold in this section with no down payment prior to the re-establishment of credit control.

Georgia—We have been selling ice equipment for a long period. Volume was unsatisfactory during the past season and this we attribute in a great measure to the number of second hand ice refrigerators placed on the market due to trade-ins on mechanical refrigerators.

Illinois—We have filled our territory with good ice refrigerators, since 1934 selling some 1800 air conditioned ice refrigerators and have reached what appears to be the saturation point. We still sell some refrigerators and carry a complete stock of refrigerators and chests at all times. Chests sell better than refrigerators. We have sold a few vegetable cases but not in comparison with other communities of equal size and territory. The cost of selling and keeping sold is too expensive for the income derived from them.

Iowa—In order to keep our appliance business more on a year-round basis, we have added most other home appliances to our merchandise lines, still putting the stress on ice appliances.

Kansas—Sale of domestic refrigerators were practically nil. Sales of picnic boxes, storage chests held their own. There has been poor response to sales of vegetable cases. There have been some conversions —and some backsliders.

Kentucky—We sell ice-using appliances but sales were exceptionally low in 1950 with exception of pressure water coolers. We do not expect to do any better on appliance sales in 1951, barring restrictions on the manufacture of mechanicals.

Kentucky—We actively sell ice-using appliances and 1950 sales were satisfactory, being about 10 percent under 1949. We expect 1951 to be a very good year appliance-wise, Regulation W, steel allocations and favorable weather should create a good demand.

Massachusetts—We sell a few refrigerators but do not think there will be too many sales until we get a refrigerator with a door in the back whereby the ice can be put in from outside the house, and a way of better drainage whereby the drain can be flushed automatically with perhaps a little water, air and soda. The matter of draining and the mess the delivery of ice does to the kitchen floor must be eliminated, and the inconvenience of waiting for the ice man must be overcome. If these things are done, then three-fourths of the objections of ice would be overcome. Many people like ice as the best refrigeration, but we must have something in a refrigerator that will eliminate most of the inconveniences.

Missouri—We sell and rent all types of ice-using appliances. Our sales doubled in 1950 over 1949 and in addition, we have a very successful rental plan on domestic refrigerators. This is the first year since the war that we have actively merchandised these appliances and we expect increasing success next year.

New York—The selling of ice-using appliances has not been satisfactory. Probably because of the lack of sales effort. Our rental plan has not been pushed. Here again we lack sales effort and it does take capital to carry a large inventory and the investment in rented appliances.

North Carolina—During the past year we sold as many units of ice-using equipment as were sold in 1949, however, revenue received from such units amounted to only about 65 percent of the revenue for 1949, the reason for this being that we sold fewer domestic refrigerators and more ice cream freezers and picnic chests.

Texas—We do sell all ice appliances. I would not say that our 1950 sales were satisfactory even though we did move quite a large amount of merchandise. We will continue to sell ice-using appliances and hope to do an even better job in 1951. This, of course, depends a great deal on what merchandise will be available and also government credit, controls, etc.

Utah—We do not sell ice refrigerators or any ice-using appliances, nor do we expect to in 1951.

Washington—Refrigerator sales were not satisfactory nor do we expect them to be in 1951.

Advertising

SCATTERING, and not enough, local advertising is done, although it is admittedly needed. Newspaper, poster, street car and bus cards, radio, refrigerator pamphlets, handbills are the more common mediums. The Public Relations Program of the National Association of Ice Industries is almost unanimously commended and tie-ins with it are the general rule, but there still does not appear to be effective tie-ins on the local level.

Arkansas—We do very little local advertising, other than National Association point-of-sale material, and hand out items. We think that the National Public Relations program for 1951 is the best they have had and we expect to tie in with it.

Canada—For a commodity of universal use, we believe the broadest advertising mediums should be employed — such as poster, street car and bus displays. Our principal direct-mailing is a 4-page calendar in one piece. We have found this form gives the maximum of variety and permanence with low cost.

Colorado—The Public Relations program is good, if it is carried out. We did some local newspaper advertising during 1950 and expect to continue on a similar basis in 1951.

Colorado—We used radio and N.A.I.I. pamphlets together with pamphlets put out by the refrigerator manufacturers, as our advertising medium. Will follow up in 1951. The N.A.I.I. Public Relations program is a good project.

Georgia—We have supported the National Ice Advertising program and have supplemented this program with local efforts ranging in cost from 10 to 15 cents per ton of sales. We deliver most of our ice on company equipment and have tried to render good service and do a good selling job.

Illinois—Very little advertising is being done, though it should be. The Public Relations program is not receiving the support to which it is entitled.

Illinois—We spent more in local advertising this past year than in any previous year and results were not anywhere near as good as previous years. National advertising is good for larger cities but in our local territory it does not do too much for us. We used radio spot announcements, film trailers and local daily newspaper.

Iowa—We did considerable advertising this year. We like the Public Relations program and think where possible it should be tied in at the local level. We used newspaper advertising, with some time on the radio. To make personal contacts with the public besides the drivers we had booth displays at the poultry show in March and the county fair in August.

Kansas—Advertising must be tailor-made. Patent medicine type of advertising will not sell ice. Best expenditure for ice is bright, alert service, as accommodating as an ambulance.

Kentucky—Advertising was cut sharply during 1950. We discontinued all theater shorts and direct mail advertising and cut down on radio and newspaper advertising. We feel that the Public Relations program is valuable but think it was wise to cut the per ton cost as a large percentage of the business we lost cannot be regained by any kind of advertising.

Kentucky—Our local advertising consists of some newspaper space plus house-to-house handbills. We get some publicity from our sales contests among employees. We had a fair degree of success with an essay contest conducted in the public schools of the county. The National Association Public Relations program is excellent and with the proper support from the industry of 1½ cents per ton on 1949 sales sufficient funds will be provided to do a real job. This program will help every ice company to sell more ice.

Massachusetts—On a local level, advertising is too expensive to do very much of it. We do some cooperative advertising with our dealers, such as uniforms, truck signs, road signs, and usually send a circular letter or folder through the mail to all the residents in our territory every spring. We are also supporting the Public Relations program which certainly helps boost the ice business.

Missouri—Our advertising is not very extensive. It consists of weekly ads in local newspapers, a few spot radio commercials, use of handbills, and a certain amount of use of National Association material. We are definitely sold on the Public Relations Program of the National Association and feel that it is doing a great job for the iceman, both nationally and locally.

New York—Our best results seem to come from direct-by-mail advertising of the many uses ice can be put to, such as cooling meats, fish and poultry in display cases, vegetables, milk, etc. We feel one weakness of our National Advertising is lack of knowledge as to the practical, money-saving uses ice can be put to. Our industry lacks in its contacts with allied industries. They can help us and we can help them, if we work together.

North Carolina—We do some local newspaper and local radio advertising and have for the past several years supported the Public Relations Program of the National Association.

Ohio—This company does not do any advertising in newspapers. As to national advertising, we do not believe that it is an incentive toward increased sales. We contribute because we believe people should know that ice people are still in business.

Texas—In 1950 we used both newspaper and radio advertising extensively, advertising both ice appliances and processed ice. We will use these same mediums in 1951 and if our budget permits will increase our advertising effort. In regard to the public relations program of the National Association, I think it is most worthwhile and deserves support from everyone in the industry.

Utah—We do no advertising of any kind except billboards along the highways advising truckers of the location of our ice plant. I think the Public Relations program of the Association is good in that it builds a background of good-will for local advertising.

Selling More Ice

THERE are ways by which sales of ice can be increased. These have been tested and proven by ice men who have used them. The research program of the National Ice Association together with public education of new uses of ice is suggested as a national background, with local effort centered on the cardinal principle of making ice available where and when and in the form desired by customers. An obvious way of doing this is through ice vending stations. One correspondent expresses the thought that ice has a unique value and that this should be made known. New markets are mentioned. Sales minded managers and a personnel trained to sell is specified as a foundation for an effective plan to sell more ice.

Arkansas—The industry can make more sales by making ice available at convenient locations to the public in the form in which they want it. More vendors will increase sales both at plants and away from plants.

Canada—We believe public attitudes should be studied with a view to appropriate action and that we must be prepared to meet changing conditions, in relation for instance to a 5-day week without disruption of service. Every means must be employed to press home the unique value of ice in a refrigerator and its manifold uses. The volume of sales must always bear a direct relation to the effort, thought and ingenuity of the dealer, and not primarily to the activities of a competitor, whether ice or the electric unit.

Colorado—Due to mechanical refrigeration cutting so heavily into the ice sales volume, it will be necessary for the ice industry to develop new markets, with especial attention to sales to mechanical owners. The public must be told and sold on the uses and benefits of iceman's ice. There are other new markets such as the dairy delivery truck icing. Small package ice sales should be stressed. Get the information to the home and to the business through advertising, personal contact and every means possible.

Illinois—To make more sales or create more business, managers should act like managers, if you want to make more sales, managers must be sales-minded and have the personnel trained to sell, from top to bottom. There is only one way to create more business and that is to sell more ice and appliances. It should start from the top.

Illinois—We have a local storage demand for some 30,000 baskets of apples that helps out on income and within the past three years have built a modern 882 locker plant and last year took on a distributorship for frozen foods. With all these added incomes we are still on the questionable side and are living in hopes.

Iowa—Here in the midwest where most all the business is done in the summer we think diversification in other lines is important to absorb some of the overhead. We have reentered the coal business with this in mind. We should have done this three or four years ago. However, we must keep ice as the main item for after all that is where the investment lies—plant and equipment.

Kentucky—We feel that the industry can create better business only through commercial sales and sized ice sales. Ice for domestic refrigeration will, of course, continue to be profitable but in our opinion it cannot be built up.

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Kentucky—On a national scale the research program together with public education of new uses of ice will create better business. Also education of the public to uses for which ice is the best. On a local level making ice easy to buy and handle will create better business. The use of vending machines for packaged ice located at convenient outlets will create better business.

Texas—There is but one thing, in my opinion, that will build a better and more profitable ice business, whether it is in 1951 or the more distant future, and that is to sell ourselves on what ice will do and put back into the ice business in money and extra effort some of the many things that it has given us in the past years. I believe if this is done and an untiring effort is put forth in the way of hard work, advertising and good service that our overall business will be good in 1951 and years to come.

Cauliflower Keeps Best When Shipped With Ice

MORE ice and lighter loads will do much to cut down spoilage of cauliflower in long distance shipments, say plant scientists of the U. S. Department of Agriculture. These findings are based on recent rail shipping tests of Long Island cauliflower to southern and western points. J. Kaufman, H. W. Hrushka, and J. S. Wiant made the study (under the Research and Marketing Act) at the request of growers and shippers who suffered losses from cauliflower spoilage in 1948.

The studies show that even during cool weather, the temperature of freshly harvested cauliflower ranges from 45 to 67 F. For highest keeping quality it should be cooled to the mid-30's immediately and held near this temperature until it reaches the consumer.

The survey of handling and shipping practices disclosed that under the best conditions—when the cauliflower is harvested on the day it is sold to shippers, from six to nine hours elapse between time of cutting and time of loading in refrigerator cars. That harvested on the preceding day, a not unusual practice, is often held up to 18 hours without cooling. Under present practices from 12,000 to 18,000 pounds of snow ice are blown over the top of the load. Ordinarily this is not replenished during transit.

In tests with two cars, one of which received top ice and the other top and bunker ice, the cauliflower in the second car arrived at the destination with fresh green leaves, firm white curds, and no decay. Heads of cauliflower in the first car were creamy to white and had three to nine loose yellow jacket leaves.

1950 Field Schools Carry Training to Local Level

TEN field schols of the National Ice Marketing Institute were held in 1950. Certificates of graduation were awarded to 194 men representing 71 companies in 15 states, and having an aggregate experience in the Ice Industry of almost 2,900 years. The schools were held in the following cities: Akron, Ohio; Los Angeles, Calif.; Menlo Park, Calif. (2); Monroe, La.; Little Rock, Ark.; Indianapolis, Ind.; Lakeland, Fla.; Miami, Fla.; St. Louis, Mo.

Each of the one-week schools in merchandising and personnel management held in 1950 was concentrated in form and stressed fundamentals. Lectures, demonstrations, conferences, and panel discussions were employed to the fullest extent.

Visiting lecturers were recruited largely from the university field. They spoke on merchandising principles, public speaking, and human relations and ranged in rank up to Dean of the University. The participating colleges and universities were, in chronological order: University of Akron; University of California at Los Angeles; Stanford University, Palo Alto, Calif.; Louisiana State University (Northeast Branch), Monroe, La.; Louisiana Tech, Ruston, La.; Butler University, Indianapolis, Ind.; Indiana University, Bloomington, Ind.; University of Tampa, Tampa, Fla.; Florida Southern College, Lakeland, Fla.; University of Miami, Miami, Fla., and St. Louis University, St. Louis, Mo. Leaders in industry and members of city and state Vocational Education Departments participated in a number of the Field Schools.

The 1950 schools were conducted by the National Association of Ice Industries in cooperation with each of the following associations: Ohio Association of Ice Industries, California Association of Ice Industries, Delta States Ice Association, Indiana Association of Ice Industries, Florida Ice Association, and the Missouri Ice Manufacturers Association.

In the first half of 1951 three schools are definitely scheduled in January, February, and March and two others are under negotiation. For the schools to be conducted in 1951 the presidents of the 1950 schools have been asked to serve as an advisory group to suggest new ideas for incorporation in the curriculum.

The members of the group of Field School Presidents are as follows: Jack Wightman, Serv-Ice Delivery Co., Akron, Ohio; Ray Maxwell, National Ice & C. S. Co., Riverside, Calif.; Al Robertson, Union Ice Co., Hayward, Calif.; Tom Frazer, Perkins Ice Company, Inc., Monroe, La.; D. F. O'Kelley, Delta Ice Co., Forrest City, Ark.; Dick Tuttle, formerly with Terre Haute Ice, Fuel & C. S. Corp., Terre Haute, Ind.; Joe Gramling, Arctic Ice Co., Inc., Plant City, Fla.; Orval Sloan, City Products Corp., Ft. Myers, Fla.; Chuck Hood, Independence Ice & Creamery Co., Independence, Mo.; Ken Sartori, National Ice & C. S. Co., San Francisco, Calif. Thomas W. Douglas is superintendent of the National Ice Marketing Institute.

Old Ice Plant Razed

WRECKERS have started razing the old Knickerbocker Ice Company's plant in Pelham, N. Y., to make way for an office building for the Esso Standard Oil Company. The property, assessed at $99,400, was purchased from the Knickerbocker concern by Esso Standard through Harry D. Cole, broker. The site will be improved with a two-story building to accommodate about 250 office employes of the Esso Standard Oil Company. A part of the grounds will be used for a parking area.

Second Field School in California

FOR its second session of the 1950-51 season, the NAII Personnel Training and Marketing Department's field school paid a return visit to Menlo Park, Calif. The course was conducted in the Hotel Marie Antoinette there during the week November 13-18.

Visitors during the session included Harold Hacke, Union Ice Company, San Francisco; Jim Reed, City Ice Delivery Company, San Francisco; and Harold Kelley, Ward Refrigerator Company, San Francisco.

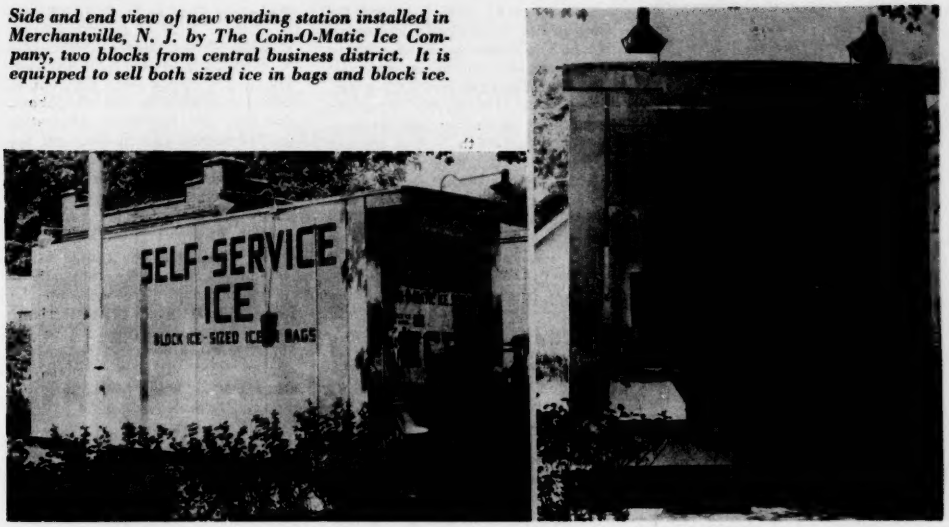
Members of second California field school held November 13-18

Sixteen men from northern California ice companies attended the school. They were awarded certificates of graduation by Jack Dawson, secretary of the California Association of Ice Industries, at a final luncheon in a local restaurant. The class had a combined total of 266 years experience in the ice industry.

Supplementing the regular conference-type instruction, led by Dr. Thomas W. Douglas, the following special lectures were heard: "Vegetable Icing" by Wally Ehlers, Union Ice Company, Oakland; "Merchandising" by James E. Holbrook, vice president of Pabco Products, Inc., San Francisco; "Public Speaking" by Professor Leland Chapin, Stanford University, Palo Alto; "Human Relations" by Professor Carlton A. Pederson, also of Stanford University; and "Conference Leading" by Earl Thompson, Coordinator of Distributive Education, San Francisco.

Class members, led by those elected officers, were as follows: Ken Sartori, National Ice & Cold Storage Co., San Francisco (president); Walter M. Weiski, Union Ice Company, Oakland (vice president); J. Russell Calvert, Progress Refrigerator Co., Burbank (secretary); Arthur Stoker, City Ice Delivery Co., San Francisco (treasurer); George R. Brown, Union Ice Company, Woodland; Maxwell L. Conaway, National Ice & Cold Storage Co., Riverside; Stan Emery, Consumers Ice Co., Oakland; Joseph A. Enos, Union Ice Company, Hayward; George W. Hall, Union Ice Company, Lodi; Sig Herzog, Jr., Marin County Ice Company, San Rafael; E. P. Milde, Union Ice Company, San Jose; Rado S. Palandech, National Ice & Cold Storage Company, Sacramento; Ron Richmond, National Ice & Cold Storage Company, Sacramento; William Spencer, Union Ice Company, Hayward; Mel York, Union Ice Company, Sonora; Ned Zappa, Santa Rosa Ice Delivery Company, Santa Rosa.

Side and end view of new vending station installed in Merchantville, N. J. by The Coin-O-Matic Ice Company, two blocks from central business district. It is equipped to sell both sized ice in bags and block ice.



Vending Station Draws New Ice Customers

A NEW ice vending station has been installed in Merchantville, N. J., by the Coin-O-Matic Ice Company, operated as a wholly owned subsidiary of The E. S. Perkins Ice Company. Over the Labor Day week end, this year, it was necessary to replenish the vending station four times over the two-day period and, although it is located only half a mile from the Merchantville ice plant, the ice plant itself suffered no decrease in sales by reason of the new station. In other words the vending station sales were all gravy.

Here is another successful installation of an ice vending station. Ice companies all over the nation are finding that these stations attract new ice customers, thereby creating new sales of ice without detracting from sales from plant platforms and other retail sales outlets.

Sells Bag and Block Ice

The new vending station is 21 ft., equipped with both a bag and block vendor, made by The Refrigeration Engineering Corp., Philadelphia, Pa. It is sheathed with Metalply, a material which was developed especially for freezer construction applications and which presents a high heat-reflective, impact-resistant surface of exceptionally attractive appearance.

It is located about two blocks from the central business district of Merchantville, on ground rented from the American Legion. Location is on one of the main highways which is heavily trafficked by buses and cars. Although there are parking facilities on both sides of the street, the company has arranged with police authorities to provide for an unloading station for approximately six cars in front of the vendor. This assures adequate stopping space for all customers.

Taxicab Delivery

An arrangement has been made with the local taxicab operators to have ice available for delivery on a 24-hour basis from the vending station. Customer merely calls up the taxicab company and instructs what purchase is to be made. The taxi delivers the purchase, charges the customer for the cost of the ice, plus the standard one-way fare from the ice house to the customer's home.

Because of special features of construction such as additional insulation in the roof, heavy-duty refrigerating machine and Metalply surface, the owners expect to enjoy exceptionally economical operation from this station.

Sales records of this station so far bears out the experience of operators throughout the country and substantiates the results of several independent surveys recently made which indicate clearly that the vending station is a medium for plus business and is very definitely one of the most important merchandising mediums for increasing sales volume.

The Coin-O-Matic Ice Company is an organization that was formed for the purpose of putting up ice vending units in locations where the present building ordinances permit the installation of this type of ice vending equipment.

Produce Concern Buys Moberly Ice Plant

THE Moberly Artificial Ice Company buildings at 325 Franklin Street, Moberly, Mo., were sold to the F. M. Stamper Company at a stockholders meeting at the ice company offices. The sale price of the ice plant, including equipment, was $65,000. The Stamper company took possession January 1 and will convert the plant into a cold storage warehouse for its poultry, egg and dairy products.

The Moberly Artificial Ice Company, now dealing in ice and coal, discontinued its ice business December 30, Willard Tompson, manager and secretary-treasurer said.

Tests Show Amount of Ice Needed for Lettuce

SHIPPERS may realize savings by using less container ice in packing western-grower lettuce, according to preliminary results of tests conducted by the Western Growers Association under contract with the U. S. Department of Agriculture. The research to date indicates that the use of less crate ice would not only make savings in the cost of ice needed but also would reduce the amount of packing injury to the commodity.

Determination of the optimum amounts of crate ice to maintain desirable commodity temperatures and pack bulges is one of the objectives of a program of research now being carried out for the Department by the Western Growers Association under a contract negotiated under authority of the Research and Marketing Act of 1946. This work is supervised by the Marketing and Facilities Research Branch of PMA.

Experimental Tests

During the period from July 1949 to June 1950, research workers of the Association, in cooperation with Federal-State inspectors and specialists of the Bureau of Plant Industry, Soils, and Agricultural Engineering, conducted 10 experimental tests of lettuce, held under varying conditions of temperature and humidity especially designed to simulate rail transit and wholesale handling and storage conditions.

The test crates—in lots of 10 to 60 for each test—were packed at field temperatures ranging from 45 to 72 degrees. These lots contained some crates packed with no ice and others with 10, 20, 30, and 40 pounds each. The crates were placed in a laboratory refrigerator car which remained on a siding. The usual amounts of top ice and channel ice were blown over the crates. At the conclusion of the tests, part of the crates were examined immediately after removal from the laboratory car and part after subsequent exposure to outside air temperatures for two days.

The outstanding difference noted at the conclusion of the tests was the damage caused by ice bruising. This damage was slight in containers with only ten pounds of ice. Damage was progressively greater in crates containing more ice. Approximately 80 pounds of pressure was required to close the lids on crates containing no ice, as compared with 190 pounds for those crates packed with 30 pounds of ice. The water-soaked appearance of the leaves due to bruising was most severe in those crates with the greatest amounts of crate ice, especially those in which the ice had not completely melted at the end of the experiment.

Some freezing injury developed in top-layer crates covered by the top ice on the load, and this damage was greatest in those containing the most ice.

In the tests the condition of the lettuce was better in crates containing smaller quantities of ice than in those in which larger amounts were used. However, it is not felt that there is sufficient evidence to warrant the conclusion that crates should be packed without ice. Indications are that the amounts of ice used inside the crates should be accommodated to the time of year and distance shipped and to the temperature of the lettuce when packed.

The importance of savings that can result from avoiding use of excessive quantities of ice may be illustrated by this fact: An average reduction of 10 pounds of ice per crate would represent an approximate annual saving to growers of $440,000 in the cost of ice alone on shipments originating in California and Arizona. This figure does not include the savings from reduction of bruising.

Additional test lots will be observed under actual commercial shipping and handling conditions to check the results of these studies and to determine the proper amount of ice to use.

Circular Solicits Pledges To Ice Promotion Program

A FOUR-PAGE circular has been issued by the Public Relations Department soliciting subscriptions to the 1951 National Ice Promotion Program. Subscribers are asked to contribute a sum equal to 1½ cents per ton on sales of ice during 1949. The circular reprints extracts from the address by Robert B. Smallwood of Thomas J. Lipton at the National Ice Convention telling how the tea industry overcame a drastic drop in sales of tea.

Milwaukee Ice Company Earns Safety Award

THE Wisconsin motor vehicle department has made awards covering safe driving of truck fleets, covering the first nine months of this year. The Taylor Hutton Co., an ice and coal company operating a number of trucks in Milwaukee, was granted second award.

Belgian Envies U. S. Ice Sales

ONE of the most interested attendants at the NAII Convention was a visitor from Belgium, K Soens of Ijsfabicek van Strombeck, Brussels. He expressed admiration for the selling and promotional accomplishments of the ice industry in the United States. An ice manufacturer and cold storage operator, Mr. Soens compared the per capita ice sales in his area and in this country.

The ice sales in the United States would be 6 million tons annually if ice consumption here were on the same basis as in the trade territory Mr. Soens serves. The figures he quoted were 40 thousand tons annual sales to one million population. Of course the ice usage in Belgium follows a considerably different pattern. For instance distances are short and the consumption in transportation of perishables is quite small. Over here the use of ice in rail transportation alone is greater than 40 thousand tons per million of population.

At the convention, Mr. Soens ordered a Lilly ice sizer. He pointed out that equipment of this type is not produced in Belgium and he wishes to follow U. S. practice in prepared ice. While here he is inspecting a number of ice manufacturing and cold storage plants and operations in allied fields.

Ice Workers at Boston Fish Pier on Strike

FOLLOWING two months of unsuccessful wage negotiations, 350 maintenance men and ice workers of the Commonwealth Ice & Cold Storage Co., located at the South Boston Fish Pier, went on strike. The ice concern is the principal source of ice for fishing vessels and wholesale fish dealers at that point.

A 10-cent an hour raise had been agreed upon but Local 3 of the International Brotherhood of Firemen and Oilers, A. F. of L. wants the raise to take effect immediately whereas the employer would have the increase effective as of next May 1.

Rubel Corp. Sells Plant

THE Rubel Corp. has sold the building at the southeast corner of Rockaway and Lott Avenues, Brooklyn, N. Y., containing 40,500 square feet of space, to the Dairy-Rich Charlotte Russe Co. The property, formerly occupied as an ice plant, will be used for the manufacture of ice cream, according to the new owners.

Reports from Unit Ice Associations

Illinois Association of Ice Industries Holds 44th Annual Meeting

THE forty-fourth annual convention of the Illinois Association of Ice Industries was held November 28-29 at the Abraham Lincoln Hotel, Springfield. An early outbreak of winter weather plus the unsatisfactory ice season last summer cut the attendance to somewhat less than normal for an Illinois ice convention.

The convention was called to order Tuesday morning by O. C. Curtis of Pekin, president of the association. Daniel A. Prager, director Personnel Training and Marketing Department, National Association of Ice Industries, speaking on the Mid-Century Ice Market told his listeners that a good product, salesmanship, good leadership and top management is necessary, more than ever before, to keep the ice industry on top. He said that the biggest job for the industry is to strengthen individual company positions thus strengthening free enterprise. This can only be done, he said, by vigorous application of modern management and active interest in selling. He advocated bold leadership from the top, fair prices, and good customer services.

Nearly 200-billion dollars worth of goods and services will be sold in the mid-century year of 1951 and the ice industry will get whatever share of business it goes after aggressively, he said. The fact that last summer was the coolest in 63 years and of a probable manpower (and other) shortages and controls are not valid excuses for weak selling.

Since ice is a recognized essential, plants will be kept going. Ice refrigerators will be produced. They will be more easily sold because of cut backs and more stringent controls on mechanicals. In areas where delivery service is no longer profitable, vendors are the only solution. More money, by 165 percent, is being spent today than in 1939. After allowing for the 42 percent decrease in the dollar's value, and 11 percent population increase, each individual earner today has more than one-third more full value dollars to spend, he said.

New Markets

C. P. Austin, director of the Research and Marketing Department of the National Association of Ice Industries pointed out that there are new markets for ice today that were unheard of a few years ago. Among these are its use for fresh vegetables in food stores, icing sweet corn and other vegetables for the local market, truck icing and through vending machines. It is through these new uses, he said, that added profits can be made by alert ice men. There are other projects in hand now, he added, that are expected to develop good returns.

R. C. Muckerman, St. Louis, City Products Corp., commenting on vending machines in the 27 states in which his company operates, said they had been entirely satisfactory.

Engineering Panel

An engineering panel was held on the effect of current economic changes in ice plant operation, presented by Everett Smith, Anna, Ill.; C. P. Austin, Washington; Eugene Rytlewski, Chicago; James Oldani, Springfield; Ed A. Brown, Ft. Madison, Iowa; and George Beuckman, Burlington, Iowa. Among the points brought out were how to meet increased expenses without increasing prices and increased production through adding float controls.

Mr. Austin pointed out that as work on packaging increases, labor becomes increasingly important, and that with the advent of a war economy, fewer workers are available and those that are available will be more inefficient. To meet this situation the industry must turn to conveyors, automatic packaging equipment and other labor saving devices. He also said the problem of sanitizing canvas bags now looms more important than ever in view of a possible paper shortage. Local health departments are interested in this problem. The sanitizing must be easier and more economical.

Following the panel discussion a proposed directory service was presented, providing for listing icing stations for trucks. No action was taken by the association, acceptance of the proposal being left up to individual ice companies.

C. F. Hood, Independence, Mo., discussing methods of regaining lost ice markets, said that ice companies must embark on a full scale marketing program. Most important, he said, is to make ice available where and when and in the form the people want it. Suggesting methods of recovery he compared the ice industry to the phonograph industry which was unable to compete with radio and so united with it to the profit of both.

Edward C. Mockler, Jr., City Products Co., Chicago, speaking on vegetable icing said it offers one of the best outlets for increased sales of ice. His company had set up a quota for this use and the result had been a very successful sales record in spite of the poor ice season. Since January 1 through November 15, 800 such new installations had been made to which were sold an average of 80 tons of ice per week—all new business.

A panel discussion on the subject followed, participated in by C. P. Austin, Washington, D. C., D. A. Prager, Washington, D. C.; C. F. Hood, Independence, Mo.; Edward Mockler, Jr., Chicago, Ill.; George Valentine, Chicago, Ill.; F. L. Reed, Monmouth, Ill.; Fred Bujnak, Belleville, Ill.; Kenneth Donovan, Pontiac, Ill.

John Glenn of Beardstown, Ill. told of new business being dumped in his lap when a farmer with 50 acres of sweet corn grown for the Chicago market came to see him about using ice. By using ice he was able to market his entire crop at top quality and with none of the usual loss.

Diversification

One of the interesting features of the convention was a session on "Diversification," a panel discussion led by John Glenn. The discussion was based partly on replies to a letter sent to all members asking for comments on this subject. Diversification is necessary in the opinion of many ice men in order to increase net income in these days of shrinking profits. Another big advantage is that sidelines may be added which will provide employment during the slack season.

Among the activities suggested were selling ice appliances, lawn mowers, washing machines, operating refrigerated lockers, household appliances, stokers, oil furnaces, hardware and paints, fishing equipment, poultry processing, dairy products, operating a hatchery, restaurant, meat curing, selling building materials, skating rink, picnic accessories, coal, fertilizer, farm machinery.

Manufacturers representatives present were introduced at the Tuesday afternoon session, and in general they warned the members to buy or order metal equipment at once. They

said the manufacturers would try to deliver as long as they could, but that shortage of metal as well as other materials seemed a likely prospect.

The highlight of the entertainment program was a fellowship party at the hotel Monday evening starting at 7:00 p.m. The "Rillettes" provided entertainment. Tuesday evening the annual banquet was held, preceded by a cocktail hour.

Officers and Directors

The following officers and directors were elected for 1951:

President, James Stubblefield, Cairo.

Vice-president, C. B. Crossette, Springfield.

Secy-treas., W. D. Wright, Clinton.

Directors: W. D. Graydon, Chicago; John Purcell, Jr., Murphysboro; Horace Tolle, Mattoon, C. B. Crossette, Springfield.

Paul Barbaro, Jefferson Ice Co., Chicago, was elected Honorary Life President.

Delta States Ice Association Reviews Ice Business at Annual Convention

THE Delta States Ice Association Convention was held at the Marion Hotel, Little Rock, Ark., November 13-14-15, 1950. Due to the excellent job performed by the various convention committees, the meeting was a most gratifying event. The program was not only well balanced but of such substance as to hold the interest of the delegates from the opening to the final session.

Official opening of the convention and reports from various association officers on the year's accomplishments utilized the first hour. First guest speaker was William M. Shepherd, vice-president, Arkansas Power & Light Company, Little Rock. His subject was—"The Middle South, A World of Opportunity". It so happens that the geographical location of the middle south covers the identical territory embraced by the Delta States Ice Association, Arkansas, Louisiana and Mississippi. The facts and figures revealed in his address were amazing and caused his audience to sit up and take notice; also it filled the delegates with enthusiasm and a new sense of pride in the aggressiveness and accomplishments of their section of the country.

Place of Competition

"Complement of Competition" by H. O. McLain, president, The Railways Ice Company, Chicago and President of the National Association, was a factual and oratorical treat. Te pointed out that the time to start worrying would be when our competition no longer tried to get business away from us. Competition is healthy and very necessary in the merchandising of any basic commodity. To progress it is necessary that the ice industry stay alert, protect its markets and through research find and develop new uses for ice. Not only should we expend effort and thought on our business, but also we should do our part in preserving our economic and political freedom. The future of this country rests in the hands of its citizens and each individual must do his part to insure future security.

National Advertising

"The National Picture"—by Guy W. Jacobs, Director, Public Relations Department, N.A.I.I. was exceedingly dramatic. After telling of the fine work that has been accomplished in the past with the limited funds available, Mr. Jacobs unfolded the plans formulated for the 1951 advertising program. The consumer program will utilize such magazines as Woman's Home Companion, Saturday Evening Post, Good Housekeeping, McCall's, Ladies Home Journal, etc. Covers of various issues of these magazines were fastened together accordion style and when released extended half way around the large Marion Hotel ballroom.

Commercial advertising will utilize over 100 specialized publications and will be aimed at the specific commercial customer whom we wish to reach. Humorous cartoons to attract the reader's attention will catch the mechanical owner's eye and illustrate the ease with which embarrassing ice shortage situations can be eliminated in his home. The impression left by this demonstration is that the entire ice industry should and will be proud of the 1951 public relations and advertising program.

Tuesday's session was called to order by first vice-president C. C. Tebbetts, Gulf Public Service Company, Minden, La. He introduced Alex S. Hill of N. Little Rock, who in turn introduced R. W. (Prof) Davis, The Union Ice Company, San Francisco, Cal.

Practical Merchandising

Professor Davis spoke on "Practical Merchandising", and without a doubt his knowledge of merchandising covers a broader scope than any man ever to appear on our convention programs. His company has had ice vending machines in use for the past twenty years. Also it pioneered in the protection and shipment of fresh fruits and vegetables with ice. Through the universities they have conducted many and varied experiments that have furthered the sale of ice at both the domestic and commercial level.

Through the medium of slides Prof Davis showed innumerable pieces of commercial equipment which they had designed to meet the many requirements of commercial ice users. These included cases for florists, meat markets, bakeries, poultry dealers, fish markets and large storages for fruit and vegetables. No project has been too large nor any consumer too small for the Union Ice Co., to give all out individual attention.

Merchandising Forum

J. C. Ruppert, Arkansas State Supervisor, Trade and Industrial Education, Little Rock and former superintendent of the National Ice Marketing Institute, conducted the Merchandising forum. He was assisted by Prof. Davis, John B. Fudickar, Monroe, La., Alden Baker, Harrisburg, Ark., Jobie Harris, Jackson, Miss., and J. C. Safford, Gulf Public Service Co., Inc., Lafayette, La. All of the men composing the panel have been doing an outstanding job of merchandising and were well qualified to give valuable advice on all phases of selling ice and ice using equipment.

Among the subjects discussed were: incentive sales campaigns, ice vendors, local advertising, vegetable icing, sales of ice refrigerators, chests, ice cream freezers, credit sales, and rental plans. As usual this portion of the program ran overtime, but the audience interest was so keen that not a soul left the ballroom although it was long past lunch time.

Second vice-president J. C. Phillips, Home Ice & Coal Co., Hattiesburg, Miss., presided at the third day's session. The first speaker of the day was William T. Jobe, General Counsel, N.A.I.I., Washington, D. C. "Notice in Advance" was the title of Mr. Jobe's address, and it brought up to date the laws and political maneuvers in Washington this year. He stressed the point that interpretations of the laws enacted were unpredictable. The administrators of the laws

are a power unto themselves and their rulings often run counter to the spirit of the law, as enacted. It is necessary that ice managers learn to except interpretations of the laws that might work a hardship on the industry.

National Situation

"A Letter to the President"—by Dave Grundfest, president, Sterling Stores Co., Inc., Little Rock was on the national situation. Mr. Grundfest stated that one evening he and his son sat listening to news reports over the radio. These reports carried news of reverses and losses in Korea, billions of dollars to be raised in taxes, unrest and dissatisfaction extant all over the world. Young Grundfest said, "Dad, the world is in a mess, why don't you do something about it?" This question worried Dave all night long and he kept asking himself what one man could do about the situation.

He finally concluded there was but one man who had the power and authority to straighten out the tangled, cross purpose endeavor in our country and the world. This letter to the President was Mr. Grundfest's plea that he, the President of the greatest nation on earth, surround himself with competent advisors, forget political expediencies and really utilize the wonderful opportunities that were his to stabilize America and the world. Also his letter was an indictment of many of the President's actions, hasty words and faulty judgment. The kind of world that our children will live in depends upon our actions—what are we doing to make it safe for them, asked Mr. Grundfest.

Additional Revenue

A. P. Hernandez, president, Hernandez Ice, Inc., Baton Rouge, La., took charge of the next portion of Wednesday's program, covering "Additional Revenue for the Ice Man". Mr. Hernandez introduced J. O. Plaisance, Jr., manager, Dunham Pure Ice Co., Baton Rouge, who has done a most remarkable job of utilizing his plant facilities to earn additional revenue. Mr. Plaisance stated that he sells milk, bread, staple groceries, cold drinks of all kinds, watermelons and manufactures and merchandises ice cream. His platform is open 24 hours per day. No additional labor is required, as his customers have been educated to self-service. His prices are slightly higher than in the stores, on many articles, but location, advertisement and availability make his project pay off. He stressed the advisability of using spot radio advertising.

Mr. Hernandez said that the amount of additional revenue possible for the average ice plant is limited only by the energy, imagination and perseverance of the plant owner, plus advertising. From experience it is his belief that good service and advertising will sell any worthwhile commodity.

Officers Elected

The following officers were elected to serve during 1951:

President, C. C. Tebbetts, Minden, La.

First Vice President, J. C. Phillips, Hattiesburg, Miss.

Second Vice President J. W. Dawley, Dallas, Texas.

Treasurer, E. L. Wise, Warren, Arkansas.

Secretary, R. N. Milling, Monroe, La.

Entertainment

The President's Snack Party, a pre-convention activity on Sunday evening, was a gala and colorful affair. The exquisitely flower bedecked table was laden with a variety of delectable hot and cold hors d'oeuvres, from which the guests were served buffet style, and beverages to suit the individual taste completed the menu. Two talented young ladies entertained throughout the evening with appropriate piano selections.

The Ladies' Luncheon held Monday at 1:00 p.m. in the Continental Room was attended by 66 attractive and gay female delegates. Mrs. R. H. Hunter, wife of the association president, presided at this occasion. She presented Mrs. W. J. Ayers of Memphis, Tenn., who in her own inimitable, informal way told the ladies what a large part they played in the success their husbands achieved and further urged them to attend every business session during the convention. A swan molded out of crystal clear ice adorned a special table surrounded by gaily wrapped prizes and individual tables took on a festive air with centered bouquets and individual sequin embossed favors. Miss Dorothy Lusk of Little Rock entertained with several beautiful vocal selections.

The banquet, floor show and dance Tuesday evening was a thoroughly enjoyable affair starting at 7:00 o'clock and ending at 1:00 a.m. Wednesday morning. The Marked Tree Ensemble, composed of talented and trained singers of high school age from Marked Tree, Ark., and vicinity proved to be a refreshing and delightful revelation in convention entertainment. Blake Cunningham, representative of The Lilly Company, who has sung with many big name orchestras, sang some of his special vocal solos. To round out a perfect evening, dancing to the strains of Tommy Scott's orchestra was enjoyed until "Good Night, Ladies" proclaimed it was already later than anyone thought.

Northwest Association Of Ice Industries

ED H. SHEA, Executive Secretary

THE 31st annual convention of the Northwest Association of Ice Industries held at Tacoma, Wash., March 30 and 31 was the most interesting and instructive yet held by that association. This year, the 32nd annual convention will be held March 29 and 30 at Vancouver, Canada, as announced below.

The semi-annual regional meeting was held at Hoquiam, Wash., July 21. This meeting was well attended by association members and sales representatives of firms selling Ice Equipment and Accessories. The active attendance at this meeting served as a tonic to stimulate interest in the fall regional meeting which was held October 13, 1950 at Lake Wilderness, Wash., near Renton, the home town of Ray Schneider, president of the Association. A delegation of ice men from Vancouver, Canada attended this meeting and reported on plans for the annual convention.

Annual Convention

The Annual Northwest Ice Convention will be held in Vancouver, Canada March 29 and 30. The program will include many opportunities for ice business profits which all ice men should hear and place in their 1951 operations. Topics have been scheduled on all branches of the ice industry. A pleasing entertainment program will be provided.

Iced Sweet Corn Popular in Illinois

THE demand for iced sweet corn is growing in Illinois, the state agricultural department said recently. Corn growers deliver their sweet corn to markets early in the morning, where it is placed under ice refrigeration and sold on the same day. Agriculture department officials Harold A. Kaeser said that method of marketing is "gaining popularity" in Illinois.

Advertising Pieces Bolster Ice Sales

A DIRECT-mail advertising campaign has brought good results for the Peoples Ice & Coal Co., Syracuse, N. Y. A blue 8½ x 11 handbill included in the illustration below, advertising ice cube service, is distributed to the better homes and in sections where the company has refrigerated outlets for cubes. In many cases, they are imprinted with the name of the outlet, as shown by the sample illustrated.

Other pieces are distributed by boys in the neighborhoods of cash and carry outlets maintained by the company. These include circulars on complete ice service, whether block, prepared ice or cubes; an illustrated piece on how to use ice for salads, cold meats, drinks, etc.; an illustrated circular emphasizing the difference between home-made and crystal-clear ice cubes; one on cooling beverages with ice; a folder on household refrigeration; a circular showing why real ice cubes are better and more economical than those made by individual ice cube machines. These pieces have made a very good impression on customers.

Drawing on his experiences of 22 years, since 1928, selling sized ice, H. D. Sanford, president of Peoples Ice comments that there are many people who do not know what is meant by sized ice, and he thinks it is too bad the ice industry hasn't been able to get before the public this meaning. Many ice companies, he says, sell sized ice without taking out the snow. This is a disadvantage, he maintains, because with the snow removed, it spreads easier and makes a better bed for display work.

The poultry people, for instance, like the size going through a 3¼-inch screen with the snow removed. Other users have a preference for a particular size. Catering to these demands offers the ice distributor an opportunity to increase sales.

LET US REMIND YOU!
It's Time To Be Using
ICE
BLOCK ICE
ICE CUBES
CRUSHED ICE
There's a Convenient Cash and Carry Ice Service in Your Neighborhood!
PEOPLE'S ICE COMPANY
For Your Convenience
A NEW SERVICE
CRYSTAL-CLEAR ICE CUBES
PACKAGED IN WATER-TIGHT PAPER BAGS
OVER 6 DOZ. FOR 25¢
HOLIHAN'S GROCERY
405 STOLP AVE.
Ordinary Homemade Ice
Crystal Clear Ice Cubes
As Different as NIGHT AND DAY
For Complete Ice Service, Call
PEOPLE'S ICE
NOW
VAN'S
REFRIGERATED
ICE SERVICE
PEOPLE'S CRYSTAL-CLEAR HARD FROZEN LONG LASTING BLOCK ICE
PACKAGED ICE IN PREPARED SIZES
PACKAGED CRYSTAL CLEAR ICE CUBES
CALL 740
CASH AND CARRY SERVICE - 425 CAYUGA ST.
VAN'S ICE
Do You Want WEAK DRINKS or GOOD DRINKS?
The kind of ICE CUBES your favorite bar uses can make a lot of difference!
FOR BETTER DRINKS,
PATRONIZE BARS THAT USE
SOLID, SQUARE ICE CUBES
THE BEST WAY TO
PEOPLE'S ICE COMPANY

The Peoples Ice Company, Syracuse, N. Y. has been selling sized ice and ice cubes since 1928. Above are examples of handbills and circulars that have helped to sell more ice.

Responsibilities Assigned Under Defense Production

ASSIGNMENT of responsibilities within the Production and Marketing Administration. U. S. Department of Agriculture, under the defense production program has been announced by Ralph S. Trigg, administrator of PMA. He also announced the establishment of new organization units to coordinate and supervise the agency's defense program activities, and some related organizational shifts. The responsibilities assigned are those under the Defense Production Act of 1950 which were delegated to the PMA administrator by Secretary of Agriculture Brannan.

The existing commodity and functional branches and offices of PMA are given the basic responsibility for developing and carrying out programs and activities related to their normal fields of operation. PMA State and County committees, Commodity offices, and other field offices will be responsible for field administration of agricultural defense activities assigned to PMA in production, storage, distribution, allocation and related fields.

New Units

Organizational changes and new units established to coordinate the PMA defense activities are:

1. *An Office of Requirements and Allocations* will serve as the central coordinating point for the development and determination of over-all food supply availability and requirements, allocations, production adjustments, and related programs. F. Marion Rhodes, formerly deputy director of the PMA Price Suport and Foreign Supply Branch, will head this office.

2. *An Office of Materials and Facilities* will supervise the over-all determination or requirements for machinery, equipment, materials and services needed in connection with production, processing, transportation and handling of food and agricultural commodities. This Office will then serve as a claimant before appropriate agencies in securing the necessary allocations and distribution of essential materials and supplies. L. B. Taylor, formerly director of the Price Support and Foreign Supply Branch, will head this office.

3. *An Administrator's Program Staff* will assist the administrator's office in the development and coordination of defense program policies and plans. Harry I. Dunkelberger, formerly chief of the PMA Program Management Staff, will head this new unit.

4. *A Price Staff* will be responsible for evaluations and recommendations with regard to price questions, including the use of price mechanisms to stimulate production, the effect of legal price minimum and other price provisions of the Defense Production Act, and the relationship of price to allocation controls, distribution, purchasing, inventory management and related activities. J. Murray Thompson, formerly deputy director of the Price Support and Foreign Supply Branch, will head this new staff.

5. The former PMA Food Distribution Programs Branch has been redesignated as the Food Distribution Branch. Its broadened responsibilities will include determining civilian food supply requirements and directing cooperative programs and operations related to the food supply and its distribution. Leonard R. Trainer will continue to head this Branch.

6. The former Price Support and Foreign Supply Branch and the former Program Management Staff have been abolished, and their functions and responsibilities have been reassigned either to the newly created units or to other branches and offices.

In carrying out defense production programs and activities, PMA will cooperate fully with other agencies of the Department of Agriculture and with other Government agencies and services in developing and carrying out defense production activities.

ASRE Makes Awards for Freon Developments

PUBLIC recognition to the three men principally responsible for the development of the Freon family of refrigerants was made by the American Society of Refrigerating Engineers during the 46th Annual Meeting of the Society in New York City, December 3 to 6.

A "Certificate of Recognition" was presented to Thomas Midgley, Jr., posthumously, and to Dr. Albert L. Henne and Robert R. McNary on Tuesday evening, Dec. 5, at the Hotel Commodore in New York. C. F. Kettering, vice president and research consultant of General Motors Corporation who instigated the research that led to the discovery of Freon-12 as a safe refrigerant, made the awards.

Thomas Midgley, Jr., died November 2, 1944. Before his death he received various awards and forms of recognition for his Freon development and other discoveries. Dr. A. L. Henne is today an associate professor in chemistry at Ohio State University and Robert R. McNary is at the Agricultural Experiment Station, College of Agriculture, University of Florida.

Warehouse Adds Section

(Continued from page 26)

switches, and additional stack lighting which may be controlled by a fork truck operator while the truck is in motion. As the truck passes over a marked spot in the aisle, the operator presses a button on the dashboard of his truck. This button energizes an induction coil on the truck which, by means of a similar coil embedded in the concrete floor, operates a relay which turns on the lights in the bay immediately ahead of the moving truck. As the operator leaves the area he repeats the process, which then turns off any lights he had lighted.

(6) Brine coils are defrosted by means of a warm brine system operated by a pump and heat exchanger in the engine room. Any individual coil or combination of coils may be defrosted separately. (7) The automatic fire alarm system consists of heat sensitive cables installed throughout the entire area, with lines of cables spaced to coincide with coil supporting angles on the first floor and attached to the ceiling in the basement by means of adhesive and metal clips (by Stic-Klip Mfg. Co. of Cambridge, Mass.) which do not puncture the vapor seal.

The design of Quincy Market's new addition incorporated details of construction and operation which were a departure from previous practice. To date all of the new features carried out in the new building, reports engineer Theodore R. Love, have proven highly successful.

Sales and Reorganizations

Nevada City, Calif.—The Nevada City Ice Delivery, formerly operated by E. W. Kendrick has been purchased by former sheriff Richard Hoskins.

Kingston, Nova Scotia, Canada—The apple warehouse of the Bluenose Fruit Company, Ltd., a co-operative organization, was sold under the auctioneer's hammer, pursuant to an order for foreclosure granted in Supreme Court.

Bethlehem, Pa.—Purchase of the Lehigh Valley Cold Storage property at Fourth and Adams Sts. for $48,000 by Lehigh University was recently announced by Dr. Martin D. Whitaker, president of the university. In announcing the acquisition of this property, President Whitaker said that another $100,000 will be spent to renovate the structure for university purposes.

Cedarburg, Wis.—James Swan has purchased the Hayes Ice Company business located between Cedarburg and Grafton on Highway 57. The business will continue to operate under the same name.

Christensen Heads A.S.R.E. Other Officers Elected

PAUL B. Christensen, vice president and chief engineer of Merchants Refrigerating Company, New York City, took office as president of the American Society of Refrigerating Engineers on December 6. Installation ceremonies, conducted by retiring president John G. Bergdoll Jr., vice president and general works manager of York Corp., were one of the concluding events of the 46th Annual Meeting of the Society, held at the Hotel Commodore in New York City from Sunday, December 3, through the 6th. Other officers and directors were also installed.

Mr. Christensen, a member of A.S.R.E. since 1937, is a graduate of Stevens Institute of Technology and joined Merchants, a large refrigerated warehousing firm in New York with branches in several other cities, in 1940. His previous experience includes connections with Kroger Grocery & Baking Co. and Cincinnati Union Terminal Co. He has been chairman of the U. S. Cold Storage Advisory Committee and an advisor on refrigerated warehouses to the Brazilian Government.

Last year Mr. Christensen was vice president of the Society and publications committee chairman, and before that was treasurer and chairman of the finance committee for three years. As well as being active in the national organization, Mr. Christensen has had a variety of experience with local Section work of the Society. He was one of the active organizers of a Section in Cincinnati but moved to New York soon after the group received its charter. In New York he again undertook active Section work and became chairman of the group in 1945-46.

Other officers who will guide A.S.R.E. activities during 1951 are: Vice Presidents, Edward Simons of San Francisco and Richard C. Jordan of Minneapolis; treasurer, Donald K. Tressler of Chicago; and the following Members of Council: C. M. Ashley, Syracuse; Leon Buehler Jr., Chicago; Oliver C. Eckel, Boston, Milton Kalischer, Springfield, Mass.; D. C. McCoy, Dayton, Ohio; and J. R. Hornaday, Muskegon, Mich. Election was by letter ballot of the Society's 5600 members and results were announced by C. L. Babin, chairman of the Tellers of Election.

Mr. Simons is a consulting engineer in San Francisco who has specialized in design, manufacture, and construction of cooling towers. He is the author of several articles in these fields and of a chapter in the Refrigerating Data Book. He joined A.S.R.E. in 1939, was instrumental in organizing the San Francisco Section in 1944 and became the group's fourth chairman in 1947-48, was elected section director in 1947, and was elected vice president of the Society the following year. He has served as chairman of the general technical and research committees.

Dr. Jordan is another member who was active in organizing a local Section—the Twin City Section—and he was first chairman of the new group. He is professor of mechanical engineering at the University of Minnesota and at present is acting head of the department of mechanical engineering. He was first elected director of A.S.R.E. in 1946 and served as treasurer during the last year.

Paul B. Christensen

The new treasurer, Dr. Tressler, is a well known authority on food preservation by refrigeration, the author (with C. F. Evers) of the definitive book, "The Freezing Preservation of Foods," and is the recently appointed scientific director of the Quartermaster Food & Container Institute in Chicago. He joined A.S.R.E. in 1936 and has been a member of council almost continuously since 1941, holding the chairmanships of several important committees such as research, publications, and program.

Among the new members of council, five will hold office for three years. Mr. Ashley is chief development engineer of Carrier Corp. Mr. Buehler is chief refrigerating engineer of Creamery Package Manufacturing Company. Mr. Eckel is Boston branch manager of Mundet Cork Corp. Mr. Kalischer is manager of the electric appliance engineering department of Westinghouse Electric Corp.; and Mr. McCoy is a specialist in sales and application engineering for Frigidaire's home freezers. Mr. Hornaday, chief engineer of the Norge Div. of Borg-Warner Corp., has been elected to fill the one-year period of Dr. Jordan's unexpired Council membership.

Tressler Scientific Director Quartermaster Institute

THE appointment of Dr. Donald K. Tressler as scientific director of the Quartermaster Food & Container Institute for the armed forces has been announced by the Institute.

Dr. Tressler is head of the group bearing his name, Donald K. Tressler and Associates, Westport, Conn. He holds an A.B. degree in chemistry from the University of Michigan and a Ph.D. in the same field from Cornell University. Early in his career he taught food chemistry at Oregon State College, Corvallis, Oregon; served successively as scientific assistant, United States Bureau of Fisheries, Washington, D. C.; as senior fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa.; and as chief chemist, Birdseye Laboratories, Gloucester, Mass. Appointed head of the Chemistry Department, New York State Agricultural Experiment Station, Geneva, New York, he served in that post until 1942, at which time he formed his own company.

He is the author of several books, among them, Marine Products of Commerce, and of numerous articles in scientific and technological journals on the preservation and nutritive value of fish, fishery by-products, quick freezing technology, food preservation including dehydration of fruits and vegetables, the vitamin content of fruits and vegetables, and related subjects.

He is a leading authority on many phases of food research and technology, including the freezing of foods, the manufacture of fruit juices and wines, fishery by-products, and the nutritive value of fruits and vegetables. He holds 17 United States patents and several foreign patents on foods, food by-products, and miscellaneous products.

New Incorporations

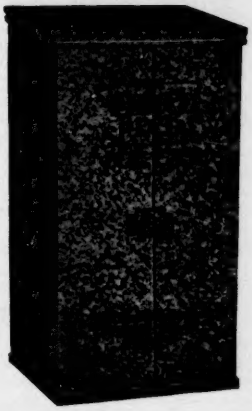
Ed Dorado, Ark.—Ice Service, Inc., filed articles of incorporation recently listing authorized capital stock at $150,000. Incorporators: Albert Harris, W. A. Dumas and Henry W. Mason.

St. Louis, Mo.—Clipper Packing & Cold Storage Co. Inc., has received a certificate of authority to commence business.

Ponca City, Okla.—A charter has been granted the Ponca City Ice Co. here. Capital stock $15,000—twenty years existence. Incorporators: C. E. Simmon, J. T. Riggs and W. D. Beard, all of this city.

Taylor, Tex.—Records indicate the recent incorporation here of the Taylor Refrigerated Warehouse Co. Principals were W. C. Wofford, George Cummings and Charlie Zimmerhanzel.

OHIO SPECIAL ICE CANS



Double Riveted Welded
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

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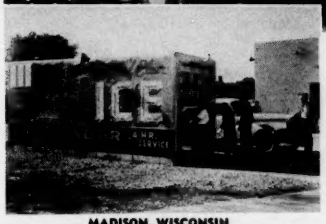
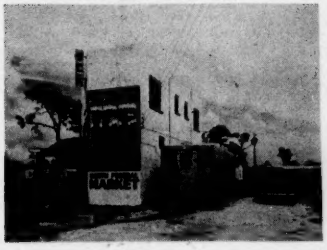
Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG. CO.

NILES — Established 1902 — OHIO



MADISON, WISCONSIN
FT. LAUDERDALE, FLORIDA



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More Per Ton in '51

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ICE VENDING STATIONS AND VENDING MACHINES

Sell 7½ lbs. of ice cubes for 25 cents—that is more than $66.50 PER TON! STURDY-BUILT helps increase tonnage sales and reduces operating costs—that's why more ice companies every day are installing Sturdy-Built Stations. Check the advantages offered by Sturdy-Built—modern, attractive design, expert engineering and construction, and a reputation for service and durability.

Self Service Ice Sales for Profit

F. B. DICKINSON & CO.
Highland Park Sta. Des Moines, Iowa

REFRIGERATED STURDY-BUILT ICE VENDING STATIONS

WRITE FOR COMPLETE DATA

Gas Refrigerators Leak; Investigation Started

THE Department of Health, New York City has started checking with health agencies in other cities to determine what their experiences have been with deaths caused by carbon monoxide from defective gas refrigerators.

"One of the purposes of this survey," Jerome Trichter, Assistant Health Commissioner, declared, "is to obtain all possible information to establish whether or not improper servicing by service companies is responsible for the recent gas refrigerator deaths in Manhattan."

Almost all the seventeen deaths reported since last Christmas have occurred in this borough, according to W. Paul Jones, president of Servel, Inc., manufacturer of 400,000 gas refrigerators used in New York.

The last poisoning from one of these appliances took place when Mrs. Mercedes Gomes de Barry, 39 years old, was found dead in her apartment at 310 East Fifty-fifth Street. She had complained that her refrigerator was not working properly. According to the Health Department, the building superintendent called the Consolidated Service Company of 331 West Broadway but a repairman did not arrive until Monday morning.

The case is now being investigated by the District Attorney's office for "possible criminal negligence." George P. Monaghan, assistant district attorney in charge of the Homicide Bureau, said he expected to have developments on the case soon.

"I understand there are 3,500,000 gas refrigerators in the United States," Mr. Trichter asserted. "We're trying to find out why so many deaths have taken place here in comparison to the number in the rest of the country, purported to be very few. That is why we must get all the facts and determine what servicing techniques are employed in other cities. We are busy studying the entire situation and will issue a complete report in the near future."

Mr. Trichner said that tenants wanting repairs on their gas refrigerators usually notify their building superintendents. In Manhattan and parts of the Bronx and Queens, he added, the superintendent either summons one of the numerous independent servicing companies or the Consolidated Edison Company.

In Brooklyn, Staten Island and the other parts of the Bronx and Queens, however, gas utility companies regularly service and repair gas refrigerators as part of a routine service to consumers, the assistant commissioner said.

Following this announcement the Health Department received sixty-six telephone calls from persons suspecting "something wrong" with their gas refrigerators. Fifty-one of the complaints were from tenants in Manhattan. According to a spokesman, about 25 per cent of the complaints "gave definite evidence signifying something might be wrong."

Inspectors were dispatched to these homes, where preliminary checks were made to see if the appliances were working properly.

The Foreman An Important Part of Management

YOU'VE got a great potential ground-gainer on your business "team." He's called the foreman, but a better name would be "Roving Ambassador of Management."

To the rank and file employee, management isn't the faraway figure behind the front-office door marked "PRIVATE." To them, the foreman is the boss—the symbol of management. Their opinion of the foreman is their opinion of the company and its ownership. If that opinion is high, morale booms and you get a rich reward in increased productivity. If you find yourself behind the employee-opinion eight ball, you can trace the blame to foremanship—or the lack of it—in all too many cases.

In other words, from the management standpoint, the foreman is a very important fellow and you should make no bones about letting him know it. Not that he should be pampered, or bribed, or cajoled into doing a good job. Primadonna's are just as undesirable at the foreman level as they are anywhere else in a properly run business.

But because he spends his working life with labor; and because he is being pressured constantly to see things from labor's point of view, nailing down his loyalty to management should be done quickly and permanently.

When he has a problem see that the door is open for consultation with executives higher up the management ladder. Give him the authority he needs to do the job you expect of him; and let him have privileges which can't be extended to regular employees. Keep him in line, but give him a pat on the back when his achievements on the job warrant it. Let him in on policy formulation wherever possible. It will help him help you by being able to explain company actions when they are questioned by labor. NARW Bulletin.

Book Review

MODERN AIR CONDITIONING HEATING AND VENTILATING, second edition. By Willis H. Carver, Realto E. Cherne and Walter A. Grant. Published by Pitman Publishing Corp., New York. Illustrated. 574 pages. Heavy cloth binding 7¼ x 10¼ inches. Price $10.00. For sale by Nickerson & Collins Co., Chicago 44, Ill.

This book covers the overlapping fields of heating and ventilating, air conditioning, and related refrigeration engineering. It considers the subjects on both a theoretical level as well as on the practical one of design, application, and use of systems and equipment, thus providing an effective link between existing theory and actual practice. Attention is given to figuring costs in order to determine the most economical investment.

The first edititon which was published in 1940 found wide acceptance in college and postgraduate courses as an auxiliary to teaching texts and as a reference manual in technical institutes and trade schools. It also has been accepted as a standard reference work for consulting, design, and operating engineers, equipment manufacturers and dealers, contractors, architects, and the steam fitting, plumbing, and sheet metal trades. This revised edition is expected to be equally welcome.

Revisions include new developments and new data uncovered during the past decade. Absorption refrigeration which has gained recent prominence and commercial importance, air purifying methods, electrostatic precipitation, and radiant and panel heating are among the subjects given extended treatment in the new version. Featured is an up-to-date revision of the psychrometric chart prepared by Dr. Carrier.

Fires and Accidents

Red Cloud, Nebr.—A recent fire at the ice plant, owned by H. C. Gellatly and C. W. Malone, practically destroyed the building. The fire was confined to the ice plant and was watched carefully by the firemen so that it would not spread to the adjacent lumber yard. The plant did not operate the past season although of late has been used for storage.

Washington, Pa.—Fire damaged a large warehouse of the Washington Ice Co., 275 Meadow Ave. which was used for storage. The engine room, freezer floor and locker plant were not reached by the flames or heat. Manager S. H. Hoch said not even a degree of temperature was lost in the food lockers.

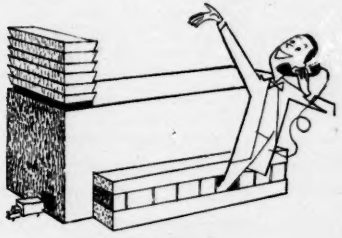
Arlington, Va.—A new $118,000 meat refrigeration plant at Fort Myers was recently destroyed by fire. The refrigeration unit was in a field commissary building, also destroyed. Cause of fire has not been determined.

Ammonia when you want it where you want it and Fast...

Armour's 65 conveniently located stock points assure you prompt delivery of Anhydrous Ammonia where you want it—when you want it—and FAST.

Armour's Anhydrous Ammonia is pure and dry, free of moisture and non-condensable gases and, to insure trouble-free operations, every cylinder is tested and checked before shipping to give positive assurance of fine quality.

Available in 50-, 100- or 150-pound cylinders.



ARMOUR *Ammonia Division*

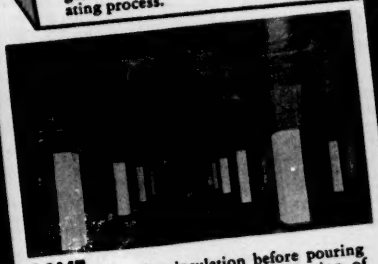
Armour and Company, 1355 W. 31st St., Chicago 9, Ill.

Put your finger on *Savings*

WHEN YOU BUILD WITH...

SMOOTH CEILINGS SYSTEM

SAVE with refrigeration pipes installed easily at lower cost. They are closer together for more efficiency in your refrigerating process.



SAVE by laying insulation before pouring concrete—eliminates costly application of insulation after floor has been poured. SAVES TIME TOO.

Above are two typical illustrations of how the Quincy Market Cold Storage and Warehouse Company of Watertown, Massachusetts, saved in the new addition to their new plant. . . . You can do the same!

SPECIAL STEEL GRILLAGES eliminate flared column caps, beams or drop panels and make these savings possible.

Write: FOR COMPLETE INFORMATION on this NEW STANDARD OF FLAT SLAB CONSTRUCTION.

SMOOTH CEILINGS SYSTEM

802 Metropolitan Life Bldg. Minneapolis 1, Minn.

CONVENTION CALENDAR

MISSOURI ICE MANUFACTURERS ASSOCIATION
January 8-10, 1951
Hotel President, Kansas City, Mo.
V. A. ESPHORST, Secy-treas.

KANSAS ASSOCIATION OF ICE INDUSTRIES
January 8-10, 1951
Hotel President, Kansas City, Mo.
C. A. BERKHISER, Secretary

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
January 21-23, 1951
Biltmore Hotel, Oklahoma City, Okla.
HARRY T. HUDSON, JR., Exec.-Secy.

THE REFRIGERATION RESEARCH FOUNDATION
February 2-4, 1951
Statler Hotel, Boston, Mass.
H. C. DIEHL, Director

AMERICAN WAREHOUSEMEN'S ASSOCIATION
February 5-8, 1951
Statler Hotel, Boston, Mass.
WM. DALTON, Executive Vice-pres.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
February 5-8, 1951
Statler Hotel, Boston, Mass.
WM. DALTON, Executive Secretary

FACT FINDING CONFERENCE
February 11-13, 1951
Kansas City, Mo.
CLIFF CARPENTER, President

SOUTHWESTERN ICE MANUFACTURERS' ASSOCIATION
February 14-16, 1951
The Hotel Galvez, Galveston, Tex.
P. A. WEATHERRED, Secy.-Counsel

GEORGIA ICE MANUFACTURERS ASSOCIATION
February 21-22, 1951
Ansley Hotel, Atlanta, Ga.
RICHARD W. FLORRID, Secretary

SOUTHERN ICE EXCHANGE
February 21-22, 1951
Ansley Hotel, Atlanta, Ga.
RICHARD W. FLORRID, Secretary

OHIO ASSOCIATION OF ICE INDUSTRIES
February 25-27, 1951
Deshler-Wallick Hotel, Columbus, O.
GUY W. JACOBS, Secretary

MICHIGAN ICE INDUSTRIES ASSOCIATION
March 1-2, 1951
Detroit Leland Hotel, Detroit, Mich.
EDWARD JACKSON, Secretary

INDIANA ASSOCIATION OF ICE INDUSTRIES
March 4-7, 1951
Lincoln Hotel, Indianapolis, Ind.
ROBT. W. WALTON, Secretary

NORTH CAROLINA ICE ASS'N.
March 12-13, 1951
Hotel Charlotte, Charlotte, N. C.
LEWIS H. POWELL, Secy.-Treas.

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
March 29-30, 1951
Vancouver, Canada
ED. H. SHEA, Exec. Secy.

Refrigeration Industries Announce New Booklet

A FORTY-PAGE brochure on the refrigeration and air conditioning industry is being prepared by the combined work of the Air Conditioning and Refrigerating Machinery Association, the Commercial Refrigerator Manufacturers Association, and the Refrigeration Equipment Manufacturers Association. It will be 8½ x 11 inches, printed in two or three colors and illustrated.

The booklet will describe what the equipment does, where it is used, and the place it has in the economy of the United States in peace and war.

ASSOCIATION DIRECTORY

AMERICAN INSTITUTE OF REFRIGERATION
H. T. McDermott, Gen. Secretary, 433 N. Waller, Chicago 44, Ill.

NATIONAL ASSOCIATION OF ICE INDUSTRIES
Mount Taylor, Secy., 1706 L St., N. W., Washington 6, D. C.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
Wm. Dalton, Exec. Vice-Pres. — Tower Bldg., Washington 5, D. C.

NATIONAL ASSOCIATION OF PRACTICAL REFRIGERATING ENGINEERS
Emerson A. Brandt, Secretary — 435 N. Waller Ave., Chicago 44, Ill.

CALIFORNIA ASSOCIATION OF ICE INDUSTRIES
Jack L. Dawson, Secretary
461 Market St., San Francisco, Calif.

CANADIAN ASSOCIATION OF ICE INDUSTRIES
Mrs. Mildred E. Croft, Secretary
317 Eglinton Ave., Toronto, Canada

DELTA STATES ICE ASSOCIATION
R. N. Milling, Secretary
Ouachita Bank Bldg., Monroe, La.

EASTERN STATES ICE ASSOCIATION
Samuel Freer, Secy.-Treas.
12 So. 12th St., Philadelphia, Pa.

FLORIDA ICE ASSOCIATION
Muriel Washburn, Secretary
1926 Silver St., Jacksonville, Fla.

ILLINOIS ASSOCIATION OF ICE INDUSTRIES
W. D. Wright, Secretary
Clinton Pure Ice Co., Clinton, Ill.

INDIANA ASSOCIATION OF ICE INDUSTRIES
Robert W. Walton, Secretary
Board of Trade Bldg., Indianapolis, Ind.

KANSAS ASSOCIATION OF ICE INDUSTRIES
C. A. Berkhiser, Secretary
Manhattan Ice & Cold Storage Co., Manhattan, Kans.

KENTUCKY ICE MANUFACTURERS ASSOCIATION
R. T. King, Secretary
429 S. Seventh St., Louisville, Ky.

MICHIGAN ICE INDUSTRIES ASSOCIATION
Edward W. Jackson, Secretary
131 E. Kalamazoo Ave., Kalamazoo, Mich.

MISSOURI ICE MANUFACTURERS ASSOCIATION
V. A. Esphorst, Secretary
3820 Washington St., St. Louis, Mo.

MOUNTAIN STATES ASS'N OF ICE INDUSTRIES
J. R. Espy, Secretary
Espy Ice Co., 2229 - 15th St., Denver, Colo.

NEBRASKA ASSOCIATION OF ICE INDUSTRIES
Frank Vogelsang, Secretary
W. T. Good Ice Co., Lincoln, Nebr.

NEW ENGLAND ICE ASSOCIATION
Raymond Wilber, Secretary
83 Winter St., Providence, R. I.

NEW YORK STATE ASS'N REF. WAREHOUSES
Chas. G. Ashe, Secretary
101 Columbia St., Buffalo 5, N. Y.

NORTH CAROLINA ICE ASSOCIATION
Lewis H. Powell, Secretary
Capital Ice & Coal Co., Raleigh, N. C.

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
Ed. H. Shea, Secretary
2027 N. E. Schuyler, Portland, Oreg.

OHIO ASSOCIATION OF ICE INDUSTRIES
Guy W. Jacobs, Secretary
The Steubenville Ice Co., Steubenville, O.

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
Harry T. Hudson, Executive Secretary
708-9 Perrine Building, Oklahoma City, Okla.

PACIFIC STATES COLD STORAGE WAREHOUSEMEN'S ASSOCIATION
Jack L. Dawson, Secretary
461 Market St., San Francisco, Calif.

SOUTH CAROLINA ICE MANUFACTURERS ASS'N
Geo. L. English, Secretary
P. O. Box 603, Columbia, S. C.

SOUTHERN ICE EXCHANGE
Richard W. Florrid, Secretary
111½ Forsyth St. N. W., Atlanta, Ga.

SOUTHWESTERN ICE MANUFACTURERS ASS'N
P. A. Weatherred, Secy. Counsel,
Mercantile Bank Bldg., Dallas, Tex.

TENNESSEE ICE MANUFACTURERS ASSOCIATION
W. E. Harlan, Secretary
Mt. Pleasant Ice Co., Mt. Pleasant, Tenn.

TRI-STATE ASSOCIATION OF ICE INDUSTRIES
L. R. Girton, Secretary
260 Boyce-Greeley Bldg., Sioux Falls, S.D.

VIRGINIA ICE MANUFACTURERS ASSOCIATION
H. H. Snyder, Secretary
Alexandria, Va.

WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
E. Dana Smith, Secretary
Diamond Ice & Coal Co., Charleston, W. Va.

WISCONSIN ASSOCIATION OF ICE INDUSTRIES
Paul F. Hoff, Secretary
1300 East Locust St., Milwaukee, Wis.

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Heavy-Duty Scoring Machine

The Perfection-Made
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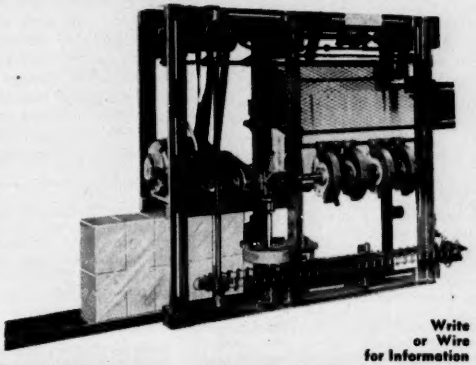
Scoring Machine is the lowest priced, completely automatic, Heavy-duty Scoring Machine on the market. Hundreds of Miller machines are in use all over the country and have been for many years.
Like all other Perfection products, the MILLER is sturdy, fast, economical in operation and maintenance.



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On Perfection Miller, Perfection Special, Regular and Conveyor-Type

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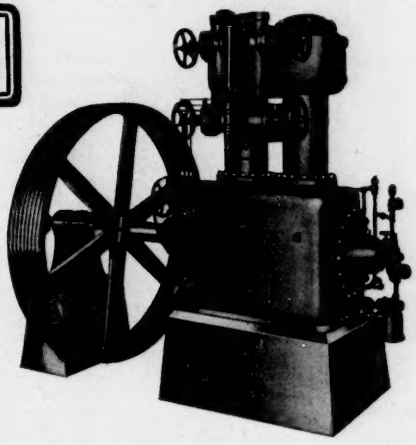
Sterling DEPENDABLE REFRIGERATION



The phrase "STERLING DEPENDABLE REFRIGERATION" is more than a slogan—it's a fact.

Built with rugged strength for endurance, with advanced design for efficiency and economy of operation, STERLING Ammonia Compressors are the product of more than fifty years of "know how" in the manufacturing of refrigeration machinery and equipment.

A complete range of sizes insures the correct compressor for each application.

Deliveries are, at present, current—most models of compressors are available from stock.

For complete information, see your nearest STERLING distributor, or write the factory.

REYNOLDS MANUFACTURING CO.
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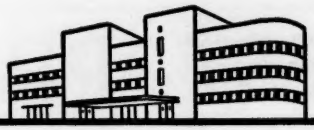
NEW PLANTS and IMPROVEMENTS



This Department each month presents the more important developments covering new constructions, as well as additions, improvements, remodeling, and installations of new equipment in ice and cold storage plants and other industrial plants that use refrigeration. News notes on all such new constructions and improvements are invited.

Arizona

Phoenix, Ariz.—Crystal Ice & Cold Storage Company has installed an additional ice vending unit at Sunnyslope.

California

Bishop, Calif.—The Inyo Coca Cola Bottling Works has established another S & S ice vending station.

Hollister, Calif.—The Hollister Ice Co. has converted a room formerly used for ice storage to a refrigerated storehouse for storing fruit. It will hold about 800 tons of fruit with temperatures ranging from 31 to 45 F.

Mayport, Calif.—Walter K. Harrison, one of the owners of a proposed freezing plant for this city, said the plant, when completed, will be able to produce 48,000 pounds of sea products in 24 hours. With the freezers down around 30 degrees below zero, the company will be able to process the catch two hours after it hits their dock, Mr. Harrison, added.

Petaluma, Calif.—A new S & S ice vending machine for the automatic dispensing of packaged ice has been installed in the Independent Ice and Cold Storage Plant.

San Diego, Calif. — Additional ice vending equipment has been installed by the Mountain Water Ice Company of this city.

Canada

Hope, B. C. — The Glacier Cold Storage Co. plant here, recently completed, has been opened for business. The plant has 300 lockers and offers the locker holders hams and bacon and later will carry butter, margarine, eggs and other products.

Connecticut

Waterbury, Conn. — Southern New England Ice Co., a division of Connohio, Inc. which is consolidating its ice-manufacturing facilities, now on Cherry St., with its fuel-distributing plant on Railroad Hill St., is planning to build a new plant on land at the company's new location in the South End.

Indiana

South Bend, Ind.—A cold storage plant which will be one of the largest in northern Indiana, is being constructed at 237 East Tutt St. for the Modern Food Processing corporation, a subsidiary of the South Bend Fish Corp. The plant's capacity will be 500,000 pounds of food. A large assortment of frozen foods and fish will be available.

Kansas

Kansas City, Kans.—Wilson & Co., meat packers, are moving into smaller modernized plant quarters at Second and Meyer Streets here which has been remodeled extensively. No announcement has been made concerning disposition of the old plant at Second St. and Osage Ave.

Michigan

Benton Harbor, Mich.—Brown Ice & Coal Company are now offering 25 lb. bags of prepared ice from a newly installed S & S ice vending machine.

Missouri

St. Louis, Mo.—The City Products Corp., 3638 Olive Street, is building a one-story brick addition for offices, to cost about $10,000.

Oklahoma

Tishomingo, Okla.—Construction of a processing plant to provide a market for local broilers and a project to market Johnston county birds under a trade name began recently at the Texoma Ice and Storage Company here. The poultry wil be sharp frozen or put in patent plastic bags.

Tennessee

Jackson, Tenn.—Beare Ice & Coal Company plans construction here of a quick freeze cold storage plant to be completed by April 1951. The plant will have capacity for freezing 150,000 lbs. every 24 hours and cold storage capacity of 1½ million lbs. The company has a similar plant under construction at its Humboldt, Tenn., ice plant as announced in the October, 1950 issue of ICE AND REFRIGERATION.

Wisconsin

Milwaukee, Wis. — The Mohawk Refrigerating Co., with a warehouse at 304 E. Florida Street, has taken out a permit for the construction of a new warehouse, to cost approximately $625,000, to be about 503 ft. in length and 25 ft. wide, to be located near the northwestern limits of Milwaukee.

DEATHS

Edward G. Kellner

THE death of Edward G. Kellner, Sr., co-founder of the Crystal Ice Co., Buffalo, N. Y., and its president since 1937, occurred November 19 after a year's illness. He was 81 years old.

Mr. Kellner and his brother, John S. Kellner, formed the Crystal Ice Co. in 1906, in which he served as secretary and treasurer. In 1926, he resigned from his position as payroll teller of the German American Bank to devote his full time to the ice company. When his brother died in 1937, he became president. He was a director of the Ellicott Permanent Savings & Loan Association, a member of the Washington Lodge A. F. & A. M. and the Buffalo Athletic Club.

WILLIAM MEADE, an employee of the Lincoln Boyle Ice Co., Chicago, Ill., for fifty years, died November 24 at the age of 75 years. Mr. Meade, who was born in Ireland, had been retired for some years.

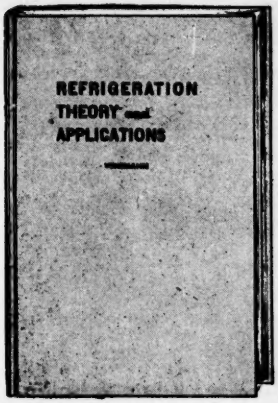
Howard M. Flanary

THE death of Howard Morton Flanary, retired secretary-treasurer of the Pure Ice & Cold Storage Co., Dallas, Tex., occurred November 26. He was 70 years old. Mr. Flanary came to Dallas with his parents in 1893. For twenty-five years he was associated with the Pure Ice & Cold Storage Co., retiring in 1928. He was an active member of the Y.M.C.A. for many years and was a life member of the Dallas Athletic Club. He was a 32nd degree Mason and a member of the Trinity Valley Lodge. He is survived by his widow, two daughters and four grandchildren.

CHARLES H. LITTLEFIELD, Rochester, N. Y., identified with the cold storage industry in Western New York for many years before his retirement, died December 13. He operated a cold storage plant in Sodus, N. Y., and later was secretary-treasurer of the Marion Cold Storage Corporation in Marion, N. Y. He was 92 years old and had retired about ten years ago.

REFRIGERATION THEORY and APPLICATIONS

A Book You Should Have!



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By Modernizing Your Refrigeration With This New Condenser System

● Power savings and water savings combine to make money for you when you replace an old fashioned refrigerant condensing method with a modern Niagara AEROPASS Condenser. Either saving quickly returns the cost of the installation; both together make an important reduction in your operating costs for refrigeration.

In this new method the refrigerant gas passes through two cooling coils. The first coil, air-cooled, removes the superheat and condenses oil vapor from the refrigerant; the second condenses the refrigerant by the evaporation of a water spray from its surface. The heat is transferred to the air; less than 10% of the water used in conventional condensers is consumed and you save the cost of the water and the cost of its piping, pumping and disposal.

In addition the Niagara Aeropass Condenser controls the head pressure of your compressors at the lowest point for good operation, reducing your power bills. It does this automatically the year 'round, giving full capacity for peak summer loads and providing the greatest power saving in cold weather.

Hundreds of experiences in all industries that use refrigeration demonstrate these benefits and prove that they give a lasting improvement in refrigeration plant operation.

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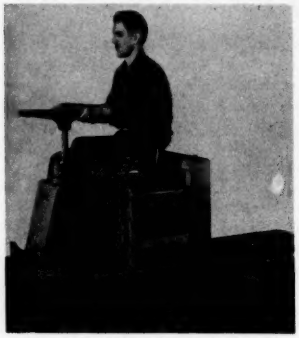
What's New

MACHINERY
APPLIANCES • PROCESSES

Load-Mobile Electric Lift Truck With Improvements

ORIGINALLY introduced shortly after World War II, the Marforge Load-Mobile manufactured by the Market Forge Co., of Everett, Mass., has undergone changes and improvements. The basic design, including the 3-way operating positions, remains the same. Most changes have to do with easier accessibility to electrical equipment and auxiliary equipment such as the lifting ram and the hydraulic pump used for lifting. Here are the important improvements:



New Load-Mobile Electric Lift Truck

A 'high-low' switch is provided for easier maneuverability in close quarters. When the button is at "low', the truck moves at slow speed regardless of the position of the operating pedal. When the button is at 'high' the operator controls the speed, either high or low, by means of the foot pedal.

Spring-mounted casters have been added to increase stability (especially in narrow models.) These casters normally clear the floor but when the truck tilts (as in making a sharp curve, etc.) the heavy springs right it promptly. This new feature allows the truck to pass over obstructions, inclines, etc. without difficulty.

With freer use of sealed ball-bearings in the control system, a light touch on the foot pedal is all that's needed to put it in required position.

A heavy roller chain operates the brake instead of an enclosed cable.

The hydraulic lifting mechanism is arranged in a vertical position at the front end of the hood where it is less likely to be damaged in transit over rough floors.

Double Seal Piston Ring

TO lessen the possibility of piston rings catching in engine cylinder ports, the Double Seal Ring Company of Fort Worth, Texas, has developed, field tested and is announcing a new addition to its line—the end-locking Sealock ring. The locking feature of the one-piece ring holds one of the ring ends "in" against the other, thus preventing the locked end from expanding into ports in a cylinder wall.

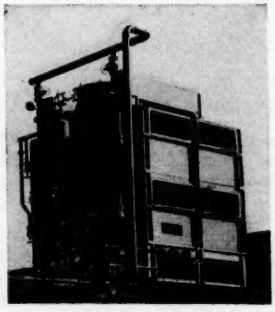
New end-locking Sealock ring made by Double Seal Ring Company, Fort Worth, Texas

According to the manufacturer field-test users report that they have experienced much less ring breakage since installing these rings in two-cycle engines. Other test reports say that use of Sealock rings in four-cycle engines—as well as in two-cycle plants—results in less wear of cylinder walls and the ring itself.

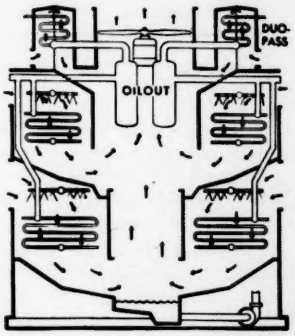
New High Capacity Aeropass Condenser

THIS new high capacity Aeropass Condenser is built to serve large refrigeration plants. Its nominal rating is 300 tons, and in field tests approximately 350 tons capacity is reported. In principle it is like the smaller units of Niagara Blower Company manufacture, making use of the company's patented "Duo-Pass" pre-cooling coil and "Oilout" oil separator.

As shown on the accompanying diagram, the refrigerant gas first passes through the pre-cooling coils which are located on top of the structure. These coils remove the superheat and reduce gas temperature close to its condensing point. This coil also condenses entrained oil vapors, thus providing an ideal point for easily removing oil from the system by the "Oilout" separator drums which are next in line.



Niagara High-Capacity Condenser



Flow Diagram of Niagara High-Capacity Condenser

The gas then passes to the condensing coils where it is condensed by the effect of evaporation of a strong water spray. By the evaporative principle approximately 1000 Btu are removed from each pound of water evaporated and condensing is most efficient, and at low temperature. Since the superheat has been previously removed there is no tendency for salts to precipitate and clog the condenser coil banks. As only the water evaporated is consumed very large water savings are made as compared to conventional condensing methods. Also, great

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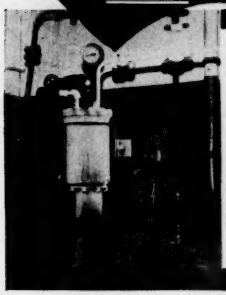

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Repeat orders like these are your best proof that Armstrong Purgers rid refrigerating systems of air and other non-condensables *and keep them that way.* Savings in power, work, water and refrigerant plus increased compressor capacity are the big benefits. Why not make them yours?

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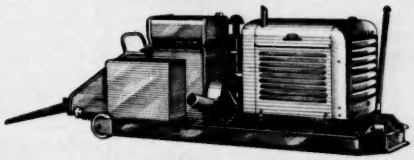

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Tri-Pak Ice Crusher-Slinger

Power packed for speed and capacity delivery, Tri-Pak's new gasoline Crusher-Slinger crushes and delivers *1800 pounds of ice every 60 seconds!*

Complete self-contained, this Crusher-Slinger unit can be moved easily and quickly on its rubber-tired ball bearing wheels. A heavy "X" type frame of welded channel steel gives rigid support to the loading ramps, the crusher, the slinger and the Ford Industrial Power Unit.

Variable twin ice feeder chains give positive feed of ice blocks into the crusher. A master clutch permits the engine to idle when not in actual use. Crusher drum and impeller wheel are dynamically and statically balanced for smooth operation.

Write or phone TODAY for complete information about Tri-Pak's gasoline or electric Crusher-Slingers, or Tri-Pak's full line of icing equipment.

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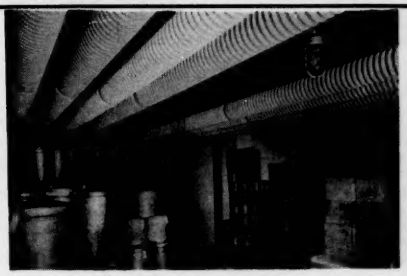

Pickled Meat Cellar
Mathew H. Klein Co., Detroit, Mich.

savings are obtained in the use of space and in piping, pumping and operating horse power.

Air is drawn through the condenser by a large propeller fan. It enters through screened ports arranged so that the correct proportion of the air stream passes through the two pre-cooling "Duo-Pass" coils and the four sprayed condensing coils. The spray water falls to a tank at the base from which it is recirculated by a pump. Exhaust air, containing a proportion of hot dry air from the pre-cooling coils, is lowed in humidity so that fog is not blown from the condenser.

In spite of the high capacity provided, the equipment is compact, measuring 14 x 13 ft. in length and breadth and 18 ft. in height. Weight is approximately 20 tons and the largest section weighs only 4 tons. With a boom derrick, the complete condenser has been assembled on the job in 2½ days. It may be installed either on a roof or on the ground, and on roof installations the load is usually far less than the piping, atmospheric condensers, spray ponds, towers, etc., that are replaced.

Recommended application is to refrigeration plants above 400 tons refrigerating so that the operator may obtain the economy that a multiple unit installation gives by varying condensing capacity with the actual refrigeration load.

New Proto Ball Type Universal Sockets

FIVE Proto universal power sockets and a universal joint, employing a ball-type coupling have been announced by J. M. Helferty, research engineer of the Plomb Tool Company, Los Angeles, Calif. They are designed for pneumatic or electric power-impact wrenches with ½ in. square drive, but are equally serviceable on adapter-equipped ⅝ and ¾ in. drive wrenches. The sockets have ½, ⅞, ⅝, ⅞ and ¾ in. hexagon openings.

Claimed features and advantages include: (1) Ball-type sockets operate smoothly at all angles and will not back off the work because force is evenly and constantly applied and they have no "dead spots". (2) The ball design is stronger and will stand more abuse than the block-type. (3) Only one pin is required. (4) Use of a pin retainer ring permits fast replacement of any part and eliminates welding of the pin to the socket wall. (5) A friction spring holds the nose end at desired placement position and working angle. (6) All sockets use the same size of driver end, spring, pin and pin retainer ring, reducing parts to stock where needed for continuous, high-speed production. (7) Increased wall thickness around pin holes prevents wall breakage. (8) Nose end of socket is tapered or recessed to increase clearance. (9) Each socket has minimum breakover of 35°-37°. (10) Ball part of socket is self-cleaning.

MANUFACTURERS' NEWS

York Corp Shows Increased Earnings

IMPROVED manufacturing methods and newly designed products largely account for the thirty-two percent gain in net earnings of York Corporation, air conditioning and refrigeration pioneers, it was announced upon issuance of the company's annual statement for the year ending September 30, 1950. The company also reported a thirteen percent increase in orders booked.

Completed sales for the year amounted to $49,088,198. Earnings after provisions for taxes at the increased rates effective July 1, 1950 were $2,139,445, equivalent to $13.37 per share of preferred stock. After provisions for preferred dividends, earnings on the common stock total $1.91 per share. York president Stewart E. Lauer told stockholders that the largest increase in orders booked was for air conditioning products and installations.

Lauer noted that following the outbreak of the Korean war there was a substantial increase in contract orders, some of which were written at the then existing price levels. Since Korea, prices have been raised to cover wage increases and cost increases in materials and components bought from suppliers. Working capital showed a gain of $774,852 over the 1949 figure. Current assets were 3.64 times current liabilities and the company's mortgage debt was reduced $598,000, leaving a long-term debt of $5,477,000.

Important developments during the year were the application of refrigeration to the rapidly growing business of citrus fruit concentrate processing and storage, and receipt of one of the largest civilian orders in the company's history from a leading food chain.

Lauer declared that sales were further stimulated by the introduction of an advanced design of ammonia refrigeration machine which was widely accepted by the dairy, brewery, packing and cold storage industries. Orders were doubled for turbo units which are chiefly used in large comfort air conditioning systems and in the textile, chemical, oil refinery and aircraft industries, and on passenger ships.

York's acquisition of control of Westerlin & Campbell Co. of Chicago, the largest mid-west distributors of air conditioning and refrigeration equipment, came too late for their earnings to be included in the annual report. However, this new subsidiary doing $6,000,000 annually, $3,000,000 of which is in York equipment, is expected to substantially increase York earnings. Westerlin & Campbell is now marketing and servicing the complete York line in Indiana, Michigan, Minnesota, North Dakota, Wisconsin and the northern half of Illinois.

Worthington Names Holmes Engineer Air Conditioning

RICHARD E. Holmes has been appointed chief engineer of the Air Conditioning & Refrigeration Division of the Worthington Pump and Machinery Corporation at Holyoke, Mass., according to an announcement by Corporation Vice-president, H. A. Feldbush.

Richard E. Holmes

Mr. Holmes received his B.S. degree from Carnegie Tech in 1928 and his M.S. degree from the University of Pittsburgh in 1932. He was associated until last year with the Air Conditioning Division of the Westinghouse Electric Corporation in Springfield and Boston, Mass., in charge of development and design engineering of air conditioning products. For the past year he has been ventilation and refrigeration engineer for the Argonne National Laboratory, Atomic Energy Commission, Chicago. He also served for three years during the recent war with Army Ordnance in Detroit on development engineering work on tanks.

A member of the ASHVE and ASRE, he has been active for many years on ACRMA engineering committees. He was a member of the recent ASRE Committee on Rating and Testing Air Conditioners which worked on revising Circular 16R. He is the author of "Air Conditioning in Summer and Winter," a textbook now being published in a revised edition. He will be responsible for the research, development and design engineering activities concerned with Worthington room coolers, self-contained and remote air conditioners, coils, condensing units, evaporative and water-cooled condensers, and cooling towers.

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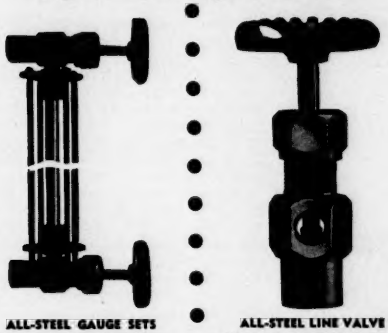
Provide maximum service under toughest operating conditions.



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All-Steel Construction. Automatic shut-off of liquid in case of glass breakage. Composition packing rings give long life, no-leak seal.

ALL-STEEL LINE VALVE
Compact—Machined from bar stock steel—Full size ports — Completely rust-proofed — Highest grade graphited composition packing. All popular sizes.

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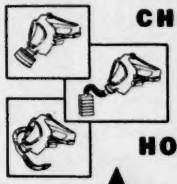
ONE ACME
No. 6 Face Piece GIVES YOU ALL 3!



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Whatever Protection is Required!

No need to provide extra face pieces to give workers the gas mask protection required for each job! Chin-style, chest-style or hose mask protection — the new ACME No. 6 Face Piece gives you all three types of protection — along with Full Vision and other important ACME advantages.
Write for new descriptive bulletin No. 504 which shows how to simplify your gas mask requirements.

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Whether your next job be for a single bend, or coil or complete piping system, Chicago Nipple can supply your requirements. Experienced workmen, practical engineers, and modern equipment reflect the quality of our products.

Coils are of selected ammonia pipe—all joints are electrically welded—checked under water with an air pressure of 300 pounds to guarantee tightness.

SEND DRAWING OR BLUE PRINT FOR QUOTATION

CHICAGO NIPPLE MFG. CO.
1997 Clybourn Ave., Chicago 14, Ill

New Concentrated Chocolate Drink

A LIMITED marketing test of a new and revolutionary frozen and concentrated chocolate drink is now being made in the Chicago area by Beatrice Foods Co. The product is packed in cans the same size as frozen orange juice concentrate and is being tested through the conventional frozen food outlets. It is made with fresh dairy ingredients from which only the water has been removed. The Beatrice product will keep indefinitely in the frozen state and is reconstituted in a manner similar to frozen concentrated orange juice.

The new product makes it possible for the housewife to prepare a chocolate-flavored drink of full strength that is indistinguishable from the drink prepared from fresh milk. All that is necessary is to add three cans of water to a can of this new chocolate drink concentrate. To make hot chocolate three cans of hot water may be added instead. It may also be used as a chocolate syrup in making chocolate-flavored puddings, cookies, cakes and frozen chocolate desserts.

If and when this concentrate becomes generally available, a week's supply of chocolate-flavored drink may be purchased in a grocery store and stored in the freezing compartment of a refrigerator, to be used as needed. Only one-fourth of the space is required as compared to the unconcentrated chocolate-flavored drink made with conventional fluid milk.

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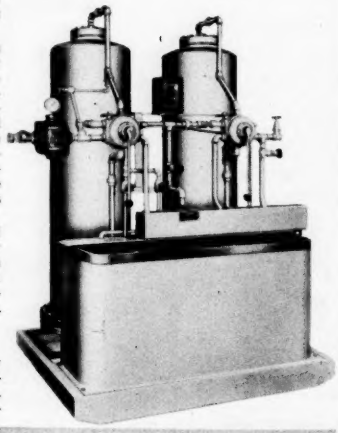
INDUSTRIAL Water Demineralizer

It's worth looking into . . .

The demineralization of water is not something new. It is used in the food industry, in the chemical and other industrial processing where chemically pure water is used in quantity. The very low cost warrants your looking into it.

Here are some of the advantages you get with an INDUSTRIAL demineralizer in ice making. Since the dissolved mineral salts in ordinary water are removed in passing through the ion-exchange resins, core-water removal and replacement is unnecessary. Losses due to cracking are greatly reduced. Freezing at the lower brine temperature increases daily yield. And the bulk of the cake of ice is clearer—your customers will notice that.

If you will send us an analysis of the water you are using, the quantity you need, and at what rate (gallons per hour) we will send you information on INDUSTRIAL demineralizers, estimate of costs, performance data, etc. Better do it now.



A typical two-bed INDUSTRIAL Water Demineralizer. Standard models available with capacities up to 1000 gph. Special units of any capacity engineered to requirements.

FILTERS Pressure Type · PUMPS Centrifugal · CORROSION TESTING APPARATUS Salt Fog • Humidity

INDUSTRIAL FILTER & PUMP MFG. CO.

5914 Ogden Avenue
Chicago 50, Illinois

RUBBER DIVISION Vulcanized Linings • Molded Products · WATER DEMINERALIZERS

Roots-Connersville Appoints Koerner New Sales Agent

THE appointment of the Koerner Engineering & Supply Co. of Portland, Oregon, as exclusive sales agents for all R-C products in the states of Oregon and Washington has been announced by Roots-Connersville Blower Corp., Connersville, Ind. C. L. Koerner, who heads the organization, has had considerable paper mill experience in the area assigned to his firm. Roots-Connersville manufactures rotary positive and centrifugal blowers and exhausters, cycloidal vacuum pumps, positive displacement meters, and inert gas generators. They are represented in twenty industrial areas throughout the United States.

Smith Elected President Baker Refrigeration Corp.

THE election of Frederick W. Smith to the presidency of the Baker Refrigeration Corporation, South Windham, Maine, has been announced by Webster B. Todd, Chairman of the Board of Directors. Smith joined the Baker organization in January—1950, as vice-president in charge of sales, and in August was named executive vice-president.

Frederick W. Smith

Smith has completed 25 years in the refrigeration and air conditioning industry. He was previously associated with the Frigidaire Division of General Motors and the Carrier Corporation. During World War II he was with the War Production Board in Washington, as chief of the branch, having jurisdiction of the commercial refrigeration, air conditioning and food machinery industry.

At the present time, he is also a director of The Air Conditioning and

Others are making money!
ARE YOU?

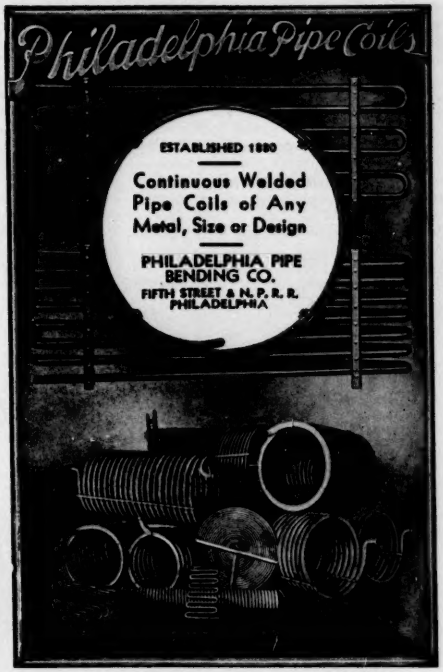
Please
Ice
Customers.
Keep them
With
Extra fine
Long
Lasting
PICKS

Every plant and ice station
should have a PICKWELL vendor.

10c mechanism		15c mechanism	
1—Only	$39.50 ea.	1—only	$44.50 ea.
2—9	37.00 ea.	2—9	42.00 ea.

Write for Details

UNITED ICE SUPPLY CO.
55 BEVERLY BOSTON 14, MASS.



CEMCO

Double Gig Ice Hoist
Fast - Sturdy -
Dependable -

Send for details

**THE CAPITAL
ELEVATOR & MFG. CO.**
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Columbus 8, Ohio

THE INDEX LINE
ICE DEALERS SUPPLIES

Only the Highest Quality Merchandise and efficient service necessary for the proper and profitable operation of your business. Write for our 1950 catalog.

INDEX COUPON AND SUPPLY COMPANY
LA PORTE, INDIANA

BLOWERS with V.P.L!

For all year-round performance, blowers must deliver positive Volume at required Pressure and Low power cost. You can depend upon the V.P.L. of R-C Rotary Positive Blowers, which have been proved for many years in large and small plants. Write us about your needs or send for Bulletin R-C 1247 without obligation.

ROOTS-CONNERSVILLE BLOWER Corp.
151 Columbia Avenue Connersville, Indiana

ROOTS-CONNERSVILLE
BLOWER BUILDERS SINCE 1854
ONE OF THE DRESSER INDUSTRIES

Refrigeration Manufacturers' Association and chairman of this organization's Government Requirement Committee.

During the eleven months ending November 30, 1950, Baker's total volume of refrigeration and air conditioning business has been increased 49 percent over the same period in 1949. In manufactured products, business is ahead over 76 percent. In addition to manufacturing refrigeration and air conditioning equipment, factory facilities are producing a substantial quantity of airplane and helicopter parts for Bell Aircraft Corp.

To provide ample manufacturing capacity for the increased demand for Baker's regular products, present and contemplated war work, its production facilities at South Windham have been greatly expanded and additional new machinery equipment installed. Further expansion is planned for February when several thousand more feet of floor space become available.

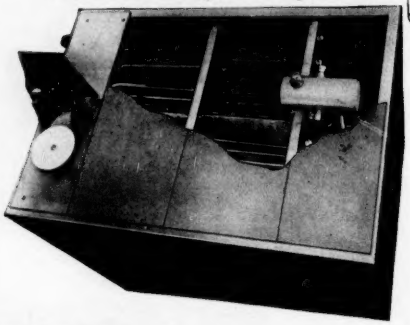
Baker also maintains manufacturing production in Omaha, Nebraska; St. Louis, Missouri; Los Angeles, California and Seattle, Washington.

Harvey Gaylor, acting president of Baker for the past year, will continue to serve on the executive committee of the corporation.

CP Compact Ice Builder

to Cut Refrigerating Costs

STORES COLD



REFRIGERATES with Sweet Water!

With a CP Compact Ice Builder you actually build up low cost refrigeration during light-demand periods to use as you require during heavy demand cycles! You reduce peak load electrical demands on which a portion of most power rates are based. You insure flexibility and highest efficiency of operation with a "reservoir" of refrigeration that you can distribute hour to hour to meet your changing needs. You are practically insured against shutdown resulting from compressor failure! "Stored Cold" is built up in the form of ice on the coils of the CP Compact Ice Builder. Melting down to 33° sweet water, it is circulated to plate coolers, tanks and other equipment using sweet water. By its very nature it is one of the most efficient and economical refrigerating methods!

There's a CP Ice Builder for every need—factory-built in capacities of 1000 to 21,000 lbs.; custom built in your plant in larger capacities. Capacities to 4,000 lbs. for Ammonia or Freon; larger sizes Ammonia only.

THE Creamery Package MFG. COMPANY
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Get the full savings and efficiency story today. Mail the coupon for *new free bulletin!*

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Please rush your new bulletin on CP Compact Ice Builders.

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Company.....

Address.....

City.....*Zone*....*State*.....

CATALOGS and BULLETINS

Duco Story in Booklet

THE story of Duco Finishes is told in a 24-page booklet issued by E. I. du Pont de Nemours & Co. Profusely illustrated, it tells the history of "Duco" finish for automobiles and other products, including refrigerators, and the impact it has made on American industry. Contrast is made of the method of finishing in 1920 and 1950, showing the much more durable finish now provided by Duco.

New Henry Catalog

CATALOG No. 100, Sections A and B has been issued by Henry Valve Co., Melrose Park, Ill., showing packless and packed valves, relief and check valves, strainers and dryers, and liquid level gauges for refrigeration, air conditioning, and industrial applications. It is illustrated with photos and drawings, and numerous tables show a complete list of sizes and other specifications.

Statement of Ownership and Management
of
ICE AND REFRIGERATION
for October 1, 1950

The following is a statement of ownership, management, etc., as required by the act of Congress of August 24, 1912, as amended by the acts of March 3, 1933 and July 2, 1946 (Title 39, United States Code, Section 233) of ICE AND REFRIGERATION, published monthly at Chicago, Ill., for October 1, 1950:

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Nickerson & Collins Co., Chicago, Illinois

Editor, H. T. McDermott, Elmhurst, Illinois.

Managing Editor, E. R. Curry, Chicago, Illinois.

Business Manager, L. R. Townsley, Chicago, Illinois.

2. The owner is (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Nickerson & Collins Co., 435 N. Waller Ave., Chicago 44, Illinois.

Stockholders: H. T. McDermott, Elmhurst, Illinois; H. T. Curtis, Chicago, Illinois; L. R. Townsley, Chicago, Illinois.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

H. T. MC DERMOTT, Editor

Sworn to and subscribed before me this 25th day of September, 1950.

Helen G. Smith

(SEAL)

(My commission expires June 24, 1952.)

THE BUYERS DIRECTORY

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ABSORBERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

AIR AGITATING SYSTEMS AND FITTINGS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.

AIR COMPRESSORS
Frick Co., Waynesboro, Pa.

AIR CONDITIONING EQUIPMENT
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc. Los Angeles, Calif.

AIR PURIFYING EQUIPMENT
General Ozone Corp., Chicago, Ill.

AMMONIA COMPRESSOR VALVES
Frick Co., Waynesboro, Pa.
Voss, Inc., J. H. H., New York, N.Y.

AMMONIA COMPRESSORS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA CONTROL DEVICES
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.

AMMONIA FLOAT VALVES
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesvoro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA MANUFACTURERS
Armour Ammonia Div., Armour & Co., Chicago, Ill.
Barrett Div., The, Allied Chemical & Dye Corp., New York, N. Y.
Bower Chemical Mfg. Co., Henry, Philadelphia, Pa.

AMMONIA MASKS
Acme Protection Equipment Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

AMMONIA PURIFIERS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA RECEIVERS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. F., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Rempe Company, Chicago, Ill.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA VALVES & FITTINGS
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.

ARCHITECTS AND ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

AUTOMATIC CONTROL DEVICES
Alco Valve Co., St. Louis, Mo.
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Rex Engineering & Sales Co., Oklahoma City, Okla.
Vilter Mfg. Co., Milwaukee, Wis.

BAGS, ICE
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

BAGS, WATERPROOF PAPER
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Co., New York, N. Y.

BEER COOLERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BLOWERS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

BOILERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BOILER TUBES
Byers Co., A. M., Pittsburgh, Pa.

BOOKS—TECHNICAL
Nickerson & Collins Co., Chicago, Ill.

BRINE CIRCULATORS
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Roots-Connersville Blower Corp., Connersville, Ky.

BRINE COOLERS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

BRINE SPRAY COOLING
Frick Co., Waynesboro, Pa.

(Buyers Directory continued on next page)

INCREASE YOUR PROFIT
WITH IMPROVED AUTOMATIC
LOADER SHAKER SIZER

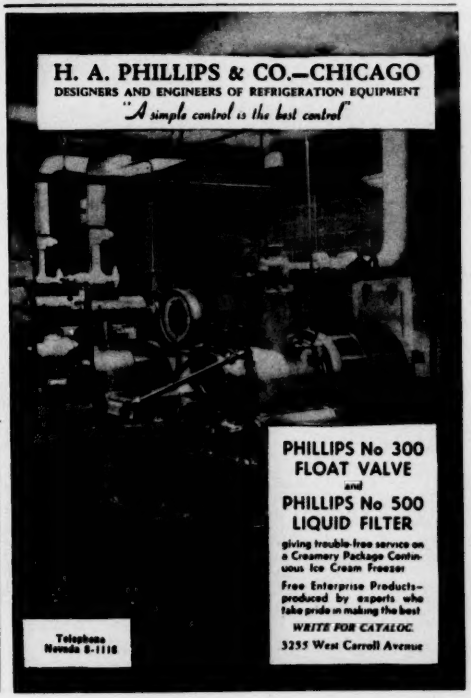
This new Bateman unit, incorporating revolutionary design that eliminates vibration on frame of shaker, assures added years of service and economy. One man can keep unit in operation, bagging and loading magazine.

Three sizer screens, running on roller bearing in counter-balancing action, operate without vibration. Screen openings, 1½", ¾" and ⅜". Shaker motor ½ H.P. Processes 175 lbs. of ice per minute. Slow revolving drum, 12 large teeth, hold snow to absolute minimum. Removable plate on side of crusher so teeth can be changed easily and quickly. Five grate adjustments to help size ice before it reaches sizing screen.

LOW PRICE: Complete with motors, switches and galvanising. F.O.B. Mineral Wells, Texas **$1,424.50**

WRITE TODAY FOR FULL INFORMATION

Bateman
Ice Processing Equipment
MINERAL WELLS, TEXAS


H. A. PHILLIPS & CO.—CHICAGO
DESIGNERS AND ENGINEERS OF REFRIGERATION EQUIPMENT
"A simple control is the best control"
PHILLIPS No 300
FLOAT VALVE
and
PHILLIPS No 500
LIQUID FILTER
giving trouble-free service on a Creamery Package Continuous Ice Cream Freezer
Free Enterprise Products—produced by experts who take pride in making the best
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LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

Your Assurance of Best Quality

REFRIGERATION COILS

made by The National
PIPE BENDING COMPANY

All features that you demand are furnished regularly in National Pipe Bending Refrigeration coils—smooth bends, perfect welds, measurements exact.

For long service specify coils by the National

Pipe Bending Co.
Established 1883
162 River St., New Haven, Conn.

THE BUYERS

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CAN DUMPS
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.

CAR ICING EQUIPMENT
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Tri-Pak Machinery Service Inc., Harlingen, Texas

COILS
Byers Co., A. M., Pittsburgh, Pa.
Chicago Nipple Mfg. Co., Chicago, Ill.
Creamery Package Mfg. Co., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.

COLD STORAGE CONSTRUCTION
Armstrong Cork Co., Lancaster, Pa.
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

COLD STORAGE DOORS
Butcher Boy Cold Storage Door Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Stge. Door Co., Hagerstown, Md.
Refrigeration Engineering Co., Montgomery, Minn.

COMPRESSORS
(See Ice Making and Refrigerating Machinery)
(See Air Compressors)

CONDENSERS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

CONSULTING ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

COOLING TOWERS
Frick Co., Waynesboro, Pa.
Vilter Mfg. Co., Milwaukee, Wis.

CORK INSULATION
Armstrong Cork Co., Lancaster, Pa.
Luse-Stevenson Co., Inc., Chicago, Ill.

COUPON BOOKS
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

COVERINGS (PIPE AND BOILERS)
Armstrong Cork Co., Lancaster, Pa.

CYLINDERS (GAS & LIQUID)
Byers Co., A. M., Pittsburgh, Pa.

DEIONIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DEMINERALIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DIP TANKS AND CAN BASKETS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Vogt Machine Co., Henry, Louisville, Ky.

DRIVES, TRANSMISSIONS
Frick Company, Waynesboro, Pa.

ELEVATING & CONVEYING MACHINERY
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

ENGINEERS AND ARCHITECTS
(See Architects and Engineers)

ENGINES
Frick Co., Waynesboro, Pa.

EVAPORATIVE CONDENSERS
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.

EVAPORATORS
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.
Vogt Machine Co., Henry, Louisville, Ky.

FEED-WATER HEATERS
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

FIBERGLAS
Armstrong Cork Co., Lancaster, Pa.

FIELD ICE SAWS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

FILTERS, CLARIFYING
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

FILTERS, WATER
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

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FIN COILS
Rempe Company, Chicago, Ill.

FIRST AID SUPPLIES
Acme Protection Equipment Co., Chicago, Ill.

FITTINGS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

FOOD FREEZING EQUIPMENT
Vogt Machine Co., Henry, Louisville, Ky.

FROZEN FOOD LOCKERS
Knickerbocker Stamping Co., Parkersburg, W. Va.
Rempe Company, Chicago, Ill.

FUEL OIL PRE-HEATERS
National Pipe Bending Co., New Haven, Conn.

HAND TRUCKS
Ohio Galvanizing & Mfg. Co., Niles, Ohio

HOISTING APPARATUS
Capital Elevator & Mfg. Co., Columbus, Ohio
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.

HUMIDITY AIR CONDITIONERS
Niagara Blower Co., New York, N.Y.

ICE BAGS
Union Bag & Paper Corp., New York, N. Y.

ICE BLOWERS
Gifford-Wood Co., Hudson, N. Y.

ICE CAN FILLERS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Vogt Machine Co., Henry, Louisville, Ky.

ICE CANS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio

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Capital Elevator & Mfg. Co., Columbus, Ohio
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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CHUTES
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.

ICE CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Refrigeration Engineering Co., Montgomery, Minn.
United Ice & Oil Supply Co., Boston, Mass.

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Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

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Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Tri-Pak Machinery Service Inc. Harlingen, Texas
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Union Bag & Paper Co., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Ice Plant Equipment Co., Inc. Philadelphia, Pa.
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Vivian Mfg. Co., St. Louis, Mo.

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Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

ICE DELIVERY BAGS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

ICE HARVESTING MACHINERY & TOOLS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

ICE MAKING AND REFRIGERATING MACHINERY
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
Enterprise Equipment Corp., Yonkers, N. Y.
Frick Company, Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

(Buyers Directory continued on next page)

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ANY SIZE

We Make Any Design of Ice Signal Card

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Write for Ice Signal Card Circular and Prices

Index Coupon & Supply Co.
LaPorte, Indiana

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AMMONIA COMPRESSORS
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FREON VALVES UP TO 12"
AMMONIA VALVES AND FITTINGS

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Aurora Always Pumps
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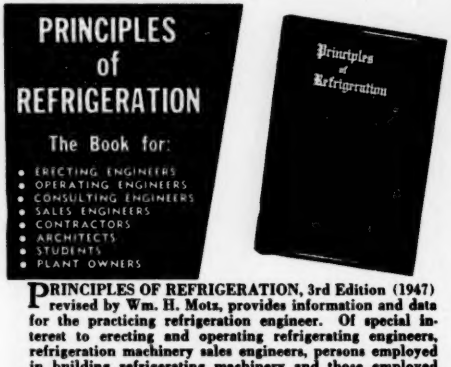

PRINCIPLES OF REFRIGERATION, 3rd Edition (1947) revised by Wm. H. Motz, provides information and data for the practicing refrigeration engineer. Of special interest to erecting and operating refrigerating engineers, refrigeration machinery sales engineers, persons employed in building refrigerating machinery and those employed in ice making, cold storage plants or other establishments equipped with refrigerating machinery. Contains information that the refrigerating engineer should know in order that he may have complete and up-to-date knowledge.

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Item No.
1—4x4 York, 300 RPM 16
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Steam Driven
1—8x8 Vertical York, 300 RPM direct connected 327

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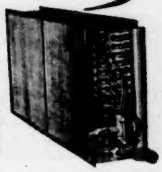

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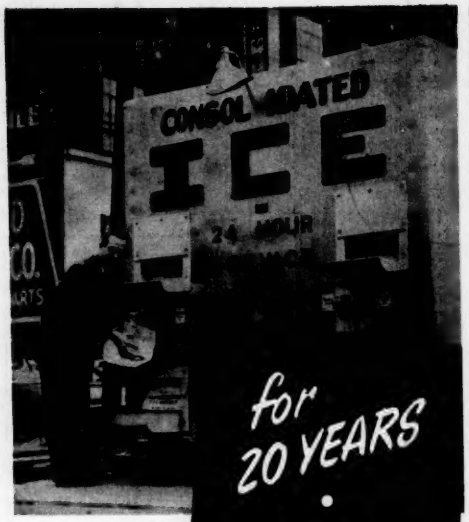

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Write for details, specifications, and new low prices.

S&S ICE VENDING MACHINES

S&S VENDING MACHINE CO.

670 Lincoln Avenue, San Jose, California

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Portland cement plaster being applied to the ceiling of a room to operate at below minus 25 degrees F.

Asphalt emulsion being applied to a ceiling for a cold room to operate above minus 25 degrees F.

We have been asked . . .

"What is the best finish for a cold room ceiling?"

"I am designing a 10° below zero room for one of my clients," writes an architect. "Regarding the ceiling finish, would asphalt emulsion or portland cement plaster be the more practical? Walls will be finished with portland cement plaster."

For temperatures above 25° F. below zero, asphalt emulsion finishes are generally used on ceilings. You'll find asphalt emulsion an excellent adhesive, and because of its low permeability to air, it eliminates a great deal of moisture penetration. In addition, asphalt emulsion is light in weight and keys firmly to corkboard without the use of mesh or wire lath. It trowels on easily and rapidly. However, the shrinkage characteristics of these finishes make them unsuitable for applications where temperatures held in the room are lower than 25° below zero.

For the ceilings of a room operating below −25°, portland cement plaster is a more satisfactory finish. To help support this heavier finish, V-rib expanded metal lath should be securely fastened to the cork with the ribs against the insulation so that the lath itself is raised above the surface of the corkboard. A layer of portland cement is then applied to fill in the space between the cork and the lath. Another coat is then trowelled over the first and scratched. The third, or finish coat, is installed over the scratched second coat.

Furnishing the right answers to questions on low-temperature insulation problems is just one of the services offered by Armstrong engineers. The complete contracting organization they represent also supplies top-quality insulation materials and skilled workmen to apply them. The next time you need low-temperature insulation, call Armstrong.

SEND US YOUR QUESTIONS: If you have any questions on the construction of low-temperature facilities, please do not hesitate to write to us. We'll see that you get a practical answer. Just address a letter or postcard to Armstrong Cork Company, 4501 Concord St., Lancaster, Penna.

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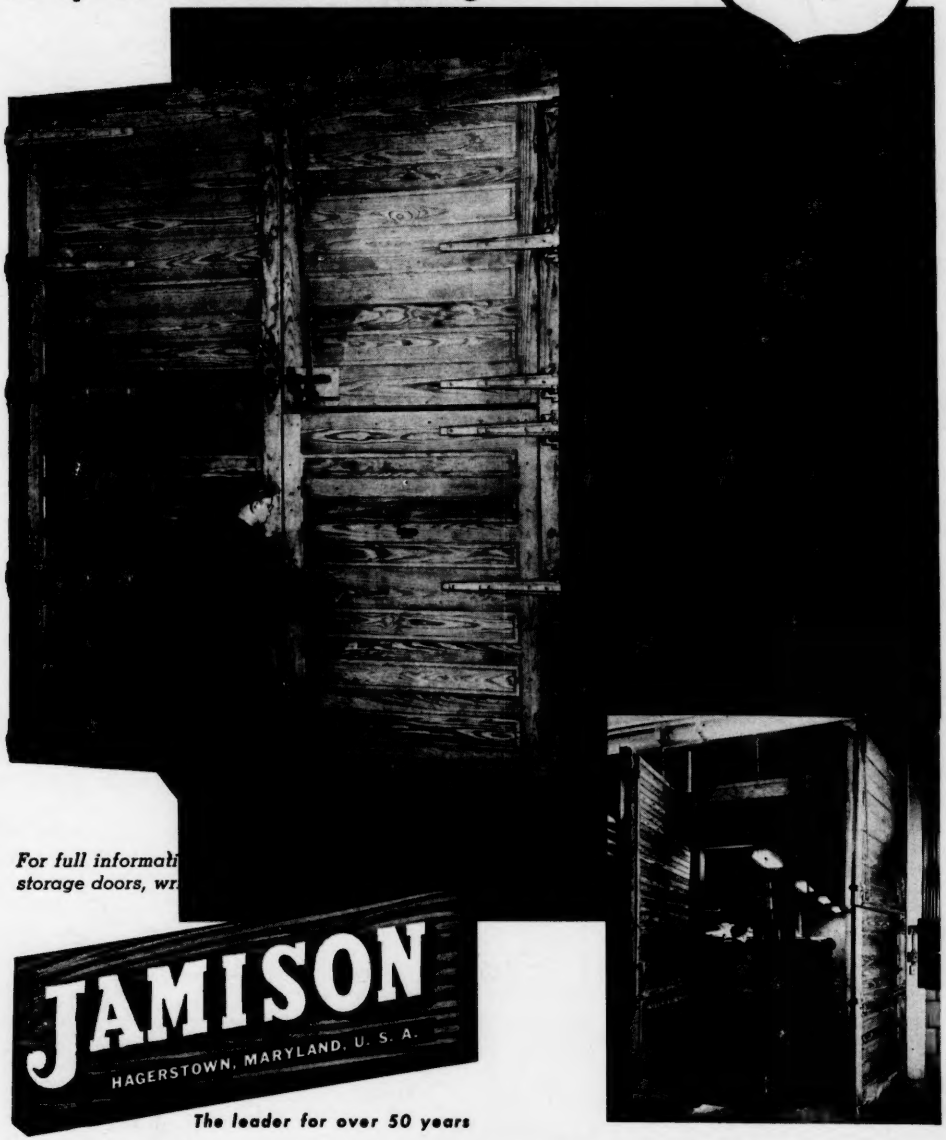

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